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THE AMERICAN FOOD JOURNAL

Chief Chemist Dr. Carl L. Alsberg
Reviews the Year's Work

What Does a Calorie Mean to You?

A Strange History Develops
a New Food Program

Branded Goods Most Profitable
for Jobbers and Retailers

Selling Army Foods

How Candy is Made

January, 1920

As dependable as the rising sun is—

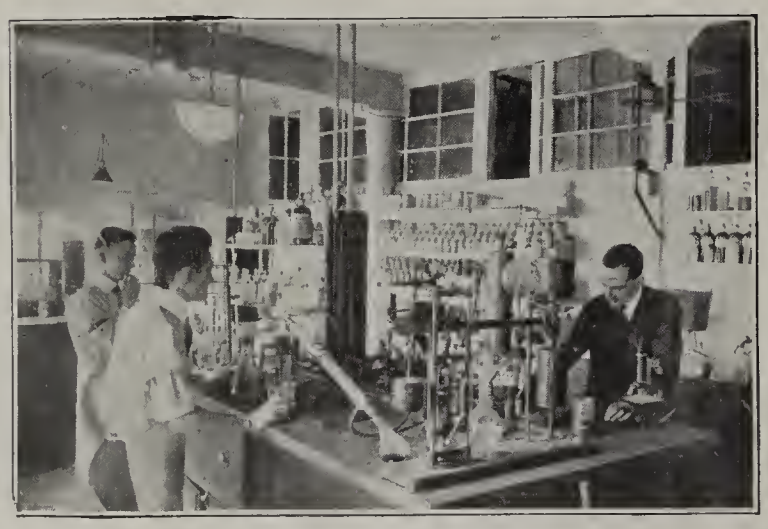
FLEISCHMANN'S YEAST

Its curative power in the matter of eradicating skin blemishes is really marvelous.

May we send you our booklet—
"Fleischmann's Compressed Yeast and Good Health?"

THE FLEISCHMANN COMPANY

LABORATORY FACILITIES



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The ceaseless and untiring efforts of our staff of Chemists and Laboratory Experts assure the utmost in "quality" of ATLAS COLORS AND FLAVORS.

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Do you know what is being done in Washington to Safeguard the American Table

DO you know that a great food industry representing an industrial investment of over $200,000,000 — the *canned* food industry —maintains headquarters at Washington with extensive laboratories devoted exclusively to the scientific aspects of preserving foods through sterilization?

These laboratories of the National Canners Association are under the direction of Dr. W. D. Bigelow, formerly with the Federal Bureau of Chemistry, and a close associate of Dr. Harvey W. Wiley on the Board of Drug and Food Inspection of the United States Government.

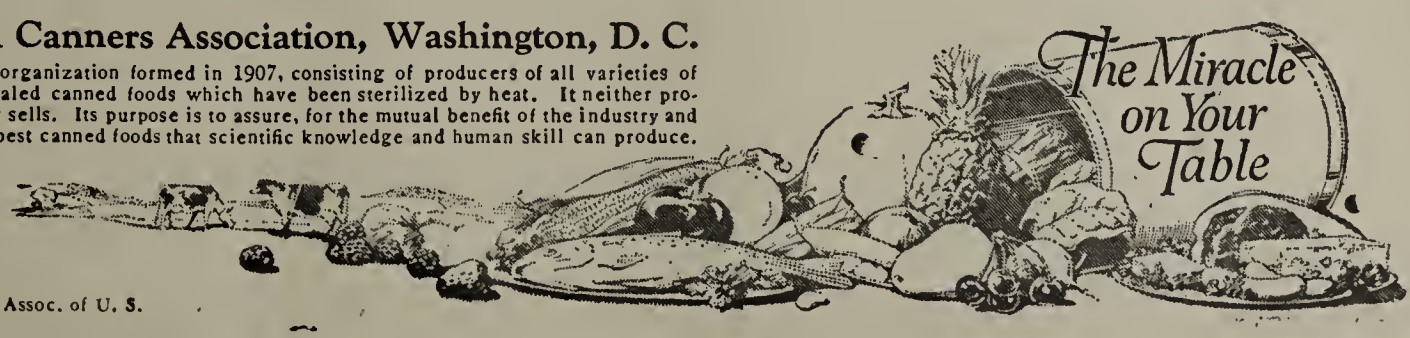
Dr. Bigelow and his staff of scientists, graduates of many of the foremost scientific institutions, carry out the exhaustive research work. Examination, analysis and elaborate experimentation, both with the product and with the container, is constantly going on. Members of the staff are continually travelling, and giving canners everywhere first-hand co-operation. Data is exchanged with other eminent laboratories (including those maintained by leading individual canners), and findings are spread broadcast to all canners for the benefit of the industry and the public.

In both chemical and bacteriological research the National Canners Association leaves no stone unturned in perfecting the multitude of products now so successfully marketed in cans. To visit these laboratories is to have new respect for the mighty industry now celebrating its one hundredth birthday.

No other country in the world equals the United States in the production and consumption of canned foods. To guard closely, therefore, the conditions surrounding their manufacture is a service which the canners of America gladly render to the people of this country.

National Canners Association, Washington, D. C.

A nation-wide organization formed in 1907, consisting of producers of all varieties of hermetically sealed canned foods which have been sterilized by heat. It neither produces, buys, nor sells. Its purpose is to assure, for the mutual benefit of the industry and the public, the best canned foods that scientific knowledge and human skill can produce.



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Saves Enough to Buy Your Whole Third Week's Supply!

Just think of the big economy of using Swift's Premium Oleomargarine! Every two weeks it saves you enough to pay for your third week's supply.

And it is a very pleasant economy to practice for all your meals are more delicious when you serve

Swift's Premium Oleomargarine

Exquisitely delicate, rich and wholesome, it is an ideal spread for bread. To season vegetables tastily, to make rich, delicious cakes, this oleomargarine is unsurpassed It is, moreover, a very wholesome food to include in your diet for it furnishes a high percentage of energy and nourishment.

This pure food is prepared under conditions of perfect cleanliness. It is never touched by hands, but is made by modern methods in cool, spotless rooms.

Your grocer has this fine oleomargarine—get a package today.

Swift's Premium Oleomargarine is the most widely distributed brand of oleomargarine.

Swift & Company, U. S. A.

THE AMERICAN FOOD JOURNAL

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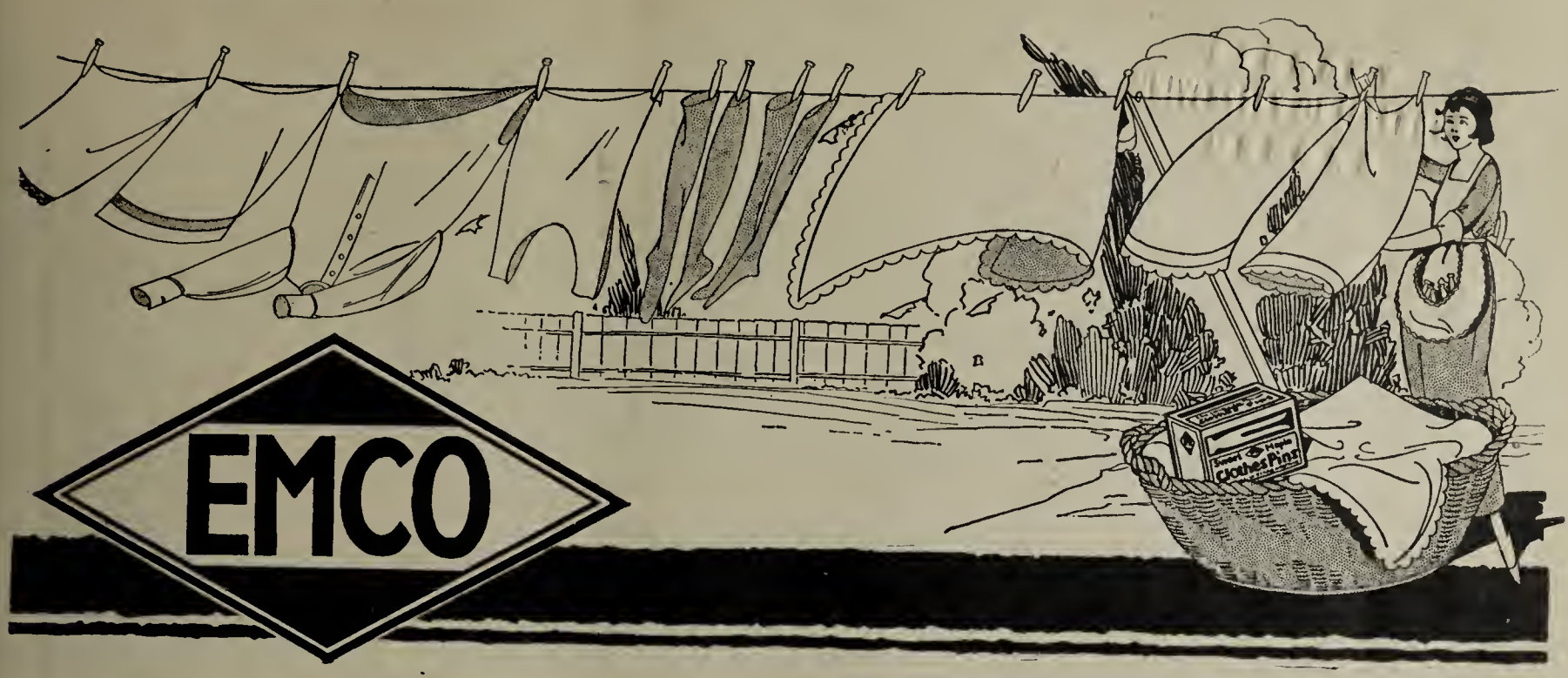


The only five dozen carton of clothespins in the market contains EMCO clothespins

Why make two or three transactions of something that your customer wants all at once?

Why pour a handful of dirty clothespins into a bag when she wants a neat, tidy package of perfect

EMCO CLOTHESPINS

EMCO pins are smooth, strong and light—made in accordance with modern domestic science requirements.

EMCO pins come in cartons containing two dozen and five dozen.

EMCO clothespin cartons are wrapped and sealed. They make "pretty stock" and are silent salesmen on any store shelf.

Do a modern, up-to-date business in this grand old staple, made and packed by the modern EMCO factory.

EMCO clothespins shipped as follows, in light, strong fibre board cases:

25/60 25 cartons of five dozen pins each
60/24 60 cartons of two dozen pins each
30/24 30 cartons of two dozen pins each

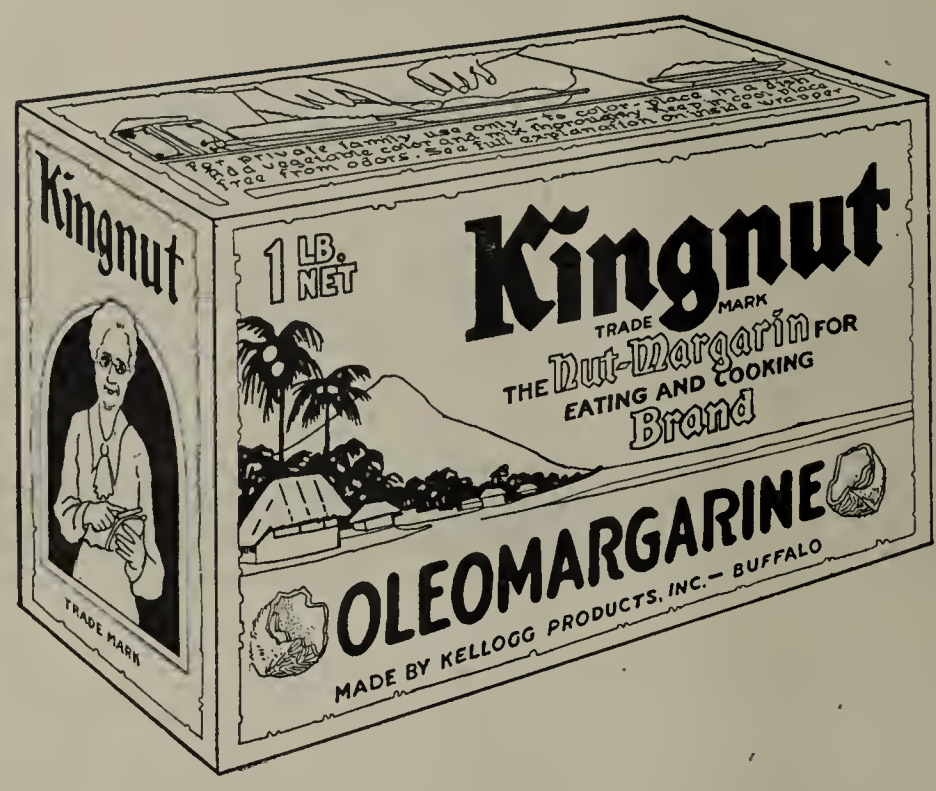
Ask your jobber for EMCO carton pins

Escanaba Manufacturing Co.

Manufacturers

Escanaba, Michigan

Makers of *EMCO Standard Wire End Dishes—EMCO Toothpicks—EMCO Maple Picnic Plates*



The Margarin That Sells Big

Your customers want to cut their living costs, and they know that margarin will help them save money.

More of your customers would buy this pure, healthful product were it not for ignorant prejudice or fear of not being pleased.

The Money-Back Guarantee overcomes this prejudice and makes sales for you.

There are no frills or conditions to our guarantee on KINGNUT.

If, for any reason, a customer is not delighted with it, give back her money and we'll refund the full retail price to you.

Only an exceptional Margarin could merit such a guarantee.

It's made from the goodness of cocoanut. Contains no animal fats.

Once your customers try it, they'll keep on buying 52 weeks in the year.

It's so good it can be guaranteed, and it's guarantee makes it easy to sell.

Push KINGNUT—it pays.

Kellogg Products, Inc.
Buffalo, N. Y.

Kingnut — **The Nut Margarin Sold on a Money Back Guarantee**

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SOME FACTS and OPINIONS

Editorials About Questions Now in the Foreground

Rare Sugar Found in Honey

Although known to occur in various forms, even perhaps as one of the constituents of the manna of Scripture, Melezitose is one of the rarest sugars. Minute quantities of it have been available to scientists for many years, but the supply has never been sufficient to permit of extensive experimentation. Now, by the aid of some Pennsylvania bees, many of which lost their lives, the United States Department of Agriculture has several kilograms of this rare substance, extracted and purified in the Bureau of Chemistry.

The bees in certain sections of Pennsylvania were storing up honey that crystallized, with the result that in the following winter seasons the bees were not able to digest it, and starved. The crystallized substance in the honey was found to be melezitose, which derives its name from *melez,* the French name for the larch tree, on which it was originally discovered in the form of honeydew. It also occurs in a sugary incrustation, or manna, on a leguminous tree in Persia and adjoining countries. Recently it has been found by the Bureau of Chemistry in a similar product on the Douglas fir in British Columbia. And now it has turned up in Pennsylvania, stored away in the honeycomb, in numerous hives. In this instance the following origin of the substance has been worked out:

The scrub pine, and rarely other species of pine, are subject to attack by a plant louse and by a scale insect. In the course of their life activities these insects produce a honeydew which is rich in melezitose. In dry summers, after the white clover flowers have ceased to yield honey, the bees turn to this honeydew, and collect it, but it crystallizes as fast as they store it away. This occurred in 1917 and 1918, and considerable losses were suffered by beekeepers. In 1919 the weather was so moist during July that no melezitose was gathered by the bees at all. But it probably will be collected in future whenever the summer is dry; and the honey of central Pennsylvania may afford a permanent source of sugar previously so rare as to be only imperfectly known. The Bureau of Chemistry extracted considerable quantities from the honey of 1917 and 1918, and is making extensive experiments with it. Rare as it has always been, there is a definite demand for melezitose for use in scientific laboratories. It can be distinguished from other sugars by certain peculiarities of crystallization observable with the polarizing microscope.

Advertising Internationalizes Foods

Advertising has performed no more useful service to society than what it is doing in internationalizing community foods.

Practically all the foods with which we are now familiar were originally indigenous to some one locality. Every nation has its own peculiar foods, or at least, foods that it favors. The principal food of a nation is largely determined, of course, by the agricultural and horticultural products that it customarily raises. In the old days people had to eat the food they could get and usually that was the food they raised themselves or was raised in their neighborhood. Food habits were thus passed from one generation to another.

Not alone nations, but also separate communities within nations developed their own food traditions. Some ingenious housewife in the locality would concoct a dish that had qualities all its own. Sometimes the recipe was passed around among neighbors, but more often it was kept a secret in the family. In either event, the dish often became locally famous, but did not attain a vogue outside of that locality.

Now, however, many of these old family recipes and community foods are being exploited commercially. The products of dozens of present-day national advertisers are based on these sectional foods. Just to mention a few such articles, there are Philadelphia Scrapple, Old Virginia Fruit Cake, Pralines and various brands of nuts, candies, jams, mince meat, pork sausage, etc.

Three important developments have made it possible to internationalize community foods. The first of these are packages and methods of packing that keep perishable foods wholesome until consumed. The other is rapid transportation. Were it not for refrigerator cars, for example, many of the finest foods would not be available to a large percentage of our population. The third development is advertising. In bringing sectional delicacies and old-time favorite dishes to the tables of the masses, it has done fully as much as packing and transportation.

Because for centuries people have eaten only the foods of their immediate localities children are born with predilections for certain articles of diet. Everyone is in the thrall of certain food habits. Left to himself man would revert to a monotonous diet. The tendency of the human race today, however, is to broaden and to vary its diet. Advertising is accomplishing this. It is breaking generations-old food habits.

Fortunate, indeed, is it that advertising is succeeding in doing this. Were it not, it is likely that, just as Sir William Crookes and Malthus predicted, the human race would some day starve, due to the inability of the exhausted earth to continue producing the same old foods in sufficient quantities. Advertising is taking the strain off of cereals, meats and dairy products, on which mankind so largely depended in the past, and thus is giving the earth a chance to grow other things.—*Editorial from Printers' Ink.*

Embargo on Ripe Olives Lifted

THE embargo placed on December 4th upon the sale and distribution of ripe olives by the State Department of Health and the State Bureau of Food Control, has been lifted after a complete and satisfactory report from Charles H. LaWall and Randle C. Rosenberger, chemists retained by the State Department.

Deaths in Detroit, Michigan, and Canton, Ohio, alleged to have been caused by the eating of ripe olives in those cities, led the Director of the Bureau of Foods and the Commissioner of Health, to take this somewhat drastic action in order to protect the health of the people of Pennsylvania. In Detroit five people died

after having eaten of the olives and in Canton there were seven.

The report of the chemists, which is herewith made public, follows:

"January 2, 1920.

"The investigation of the quality of the ripe olives as sold upon the Pennsylvania market which we have been making under your direction during the past month, has been completed.

"Two hundred and fifty-four samples have been examined, representing seventy-one different brands and one hundred styles and sizes. Of these samples thirty-nine were of the 'Supreme' brand put up by the Curtis Olive Corporation of Los Angeles, California.

"The investigation included a thorough, comprehensive series of chemical tests for adulterants and preservatives, including boric, benzoic and salicylic acids, formaldehyde and also for alkaloidal poisons. Nothing abnormal chemically was detected in any of the samples.

"Most of the samples were in cans and jars and all of these were in perfect condition as regards their preservation. There were no swelled, buckles or leaky containers, although some of the packages were dirty and shopworn. None of the samples possessed any offensive, putrefactive or decomposition odor and in the majority of cases the flavor was good, some few being insipid. The consistency and color were both variable, probably due to different stages of ripeness and to the treatment before being packed.

"From the chemical and bacteriological examinations and the results of animal inoculations it can be safely said that none of the olives submitted contained anything poisonous or harmful. The *bacillus botulinus* (or other disease producing organism) was not found, nor were any of the samples found to be adulterated in any manner whatever.

"If ripe olives were likely to cause botulism there was abundant opportunity among the laboratory workers for the disease to develop, for, supplementing the preliminary tests, they were eaten freely throughout the work with no untoward results.

"In our opinion, the chances of such poisoning are so extremely remote that the olive consuming public who favor the ripe variety may resume their diet with a feeling of perfect security.

"Very truly yours,
(Signed) "CHARLES H. LAWALL,
"Dean, Philadelphia College of Pharmacy, Philadelphia.
(Signed) "RANDLE C. ROSENBERGER,
"Bacteriologist, Philadelphia General Hospital."

The chemical and bacteriological examinations show that there was nothing found in the 254 samples, representing seventy-one different brands, that would warrant the contention that the samples were unsafe for human consumption.

People Eating More Bread

15% Increase in Consumption of Flour Shown by Barnes

An increase in America's flour consumption of almost fifteen per cent, or three million barrels in seventy days, indicating that the housewives of the country have effected a direct saving in household expenditures by eating more bread and less of the higher priced foods as advocated several weeks ago by Julius H. Barnes, United States Wheat Director, is shown in the nineteenth weekly bulletin on wheat and wheat flour movement issued by the United States Grain Corporation.

Commenting on the figures in the bulletin, Mr. Barnes said:

"This is the first time since July that the wheat deliveries from the farms of this country have been less than for the corresponding week of the last crop.

"This fall in deliveries is fully due, for more than fifty million bushels have left the farms in excess of the total quantity for the same time last year. It is interesting to note, also, that the flour production for the crop-year, to date, is 15% larger than a year ago, and as our exports of flour for that period are approximately the same as a year ago, it would indicate that the American people are increasing their flour consumption, perhaps to the extent of almost 15%, or three million barrels in 70 days.

"This view is also confirmed by the sharp fall in prices of replaced foods. For instance, lard, which sold in Chicago, wholesale, at 35 cents not 60 days ago, has fallen to 22 cents, and edible oils now show sharp declines in sympathy. Condensed and evaporated milks have not shown the usual fall tendency to advance. It is to be hoped this flour replacement will continue and increase, for it not only means a direct saving in household expenditures, but further reflection into the prices of higher-priced foods which, last year, displaced part of the usual flour consumption."

Canners to Consider Greater Food Production

WITH the problem of feeding a reconstructed world ahead of us, the Thirteenth Annual Meeting of the National Canners Association at Cleveland, January 26 to 30, promises to be the most important gathering in the history of the organization. At the same time there will assemble the Canning Machinery & Supplies Association, and the National Canned Foods & Dried Fruit Brokers Association.

"This period presents problems of equal importance to those encountered during the war," says a statement by Frank Gerber, of Fremont, Mich., president of the Canners; R. A. Sindall, of Baltimore, president of Machinery Association, and H. A. N. Daily, of Philadelphia, president of the Brokers. "Having met the war problems by collective effort, it is planned by continuing such effort to secure greater production and consumption and thus meet the needs of the reconstruction period."

Inspection and Education Keynote

Coincident with the opening of the second century of the canning industry in the United States, is the launching of the campaign of education and advertising, and the extension of the inspection service. These will be two of the principal themes of the Cleveland convention.

Realizing the need of a workable plan for leading the consumer to appreciate the merits of canned foods, an inspection of fruit and vegetables is already assured in southern California, Illinois, Michigan, Wisconsin, Ohio, Indiana, Minnesota, Iowa, Nebraska, New York, in addition to the sardine and tuna inspection in California and in Maine, and a sanitary survey of the salmon canneries in Alaska and the Pacific Coast states. Several more states are reasonably sure of entering the inspection this year.

Results of Research Reported

Chief Chemist of United States Department of Agriculture Outlines Work of Bureau of Chemistry on Foods, Drugs and Other Products

ENFORCING the Federal Food and Drugs Act, developing methods in food distribution, finding uses for waste products, aiding industrial development by working out technological processes, and reporting the results of chemical research are features of the work of the Bureau of Chemistry, U. S. Department of Agriculture, during the last fiscal year, as outlined in the recently published report of the Chemist and Chief of Bureau, Dr. Carl L. Alsberg.

Although the staff of the Bureau was greatly depleted because of the unprecedented demand of the industries for experienced chemists, the volume of the work and the results accomplished in the technological and regulatory activities of the Bureau compared favorably with previous years, says the report. A larger number of prosecutions and seizures were effected than in any previous year. The constructive research work of the Bureau has not yet returned to normal because it was considered advisable to complete certain war problems which will have a bearing on peace-time industries, and because of the loss of a number of the more experienced research chemists. Nevertheless, the momentum of the Bureau's research organization has been sufficient to produce a larger number of publications than ever before.

Enforcing the Food and Drugs Act

Slack-filled cans, decomposed eggs, fake egg substitutes, butter containing excess water, glue sold as edible gelatin, olive oil adulterated with cheaper oils, frozen oranges, canned tomatoes adulterated with water, "soaked" oysters and scallops, cocoa adulterated with cocoa shells, adulterated and misbranded vinegar, falsely labeled and adulterated stock feeds and misbranded medicines were among the violations of the Federal Food and Drugs Act on which 1,052 seizures and 843 criminal prosecutions, inaugurated during the year, were based. Other products involved in the regulatory activities because of adulteration or misbranding, or both, were beverages, extracts, flavors, candy, coffee, tea, food colors, milk, cream, crude drugs, pharmaceutical preparations, fruits, jams, jellies, lard, meat, poultry, nuts, sirups, spices, vegetables and water.

Much of the time of the regulatory force of the Bureau was taken up with the prevention of the sale to the consumer of stale or tainted canned salmon. This work involved the examination in detail of the vast surplus stores of canned salmon held by the Army before they were permitted to be turned back into the ordinary channels of trade.

Of 1,019 cases of all kinds reported to the Department as terminated in the courts during the year only three were reported as decided unfavorably to the Government. A number of important food-inspection decisions were issued. They included definitions and standards for soda water flavors, soda water, milk and cream, and rulings regarding colors in food and marking the quantity of food in package form.

Improving Food Distribution

Progress is reported in the work of the Bureau on developing better methods for handling, packing, shipping and storing poultry, eggs and fish in order to reduce losses while in the channels of trade from producer to consumer, and to bring about more economical distribution of these perishable products.

It has been demonstrated that the use of 100-pound boxes in place of barrels for shipping fresh fish prevents damage and loss from the pressure and bruises to which fish in the bottom of barrels are subjected. Producers were instructed in the packing of fish, the loading of refrigerator cars and the building and equipment of fish freezers. Carload shipments of fish from Florida to Savannah, Louisville, Nashville and Indianapolis were supervised. Better methods for handling salmon in order to reduce spoilage from bacterial invasion are being developed. Information on the preservation of Pacific Coast sardines by smoking has been disseminated. Many experimental shipments of fish have been made to determine the chief causes of spoilage and how to eliminate it.

Instructions regarding accuracy in the commercial grading of eggs have been issued. Efficient methods and apparatus for candling eggs on a commercial scale have been devised. The results of the studies on the preservation of eggs by cold storage have been published. Through cooperation with the Railroad Administration there was brought about a marked reduction in the breakage of eggs during transportation.

Conserving Foods

Constructive methods for conserving foods from the season of plenty to the time of scarcity and means for preventing loss from spoilage have been developed as the result of research and experimental work. Special attention was given to the development of an industry for drying fruits and vegetables with the view of improving the attractiveness and the quality of the product. Commercial methods and machinery for drying have been studied. Laboratory investigations on an extensive scale were undertaken to compare the nutritional qualities of dried products with those of canned and fresh material. The results have been favorable. The drying work on the whole has been of practical assistance in establishing a sound permanent industry.

Work on the preservation of foods by fermentation and brining has been continued. Studies are under way to improve the manufacture of pickles and prevent the losses that occur at present because of softening of the pickles during storage. Improved methods for the manufacture of sauerkraut have been developed in co-operation with manufacturers.

The first complete and critical survey of the fat and oil industry of the United States was made in co-operation with the United States Food Administration, and the results, with statistics of the industry, have been published.

For the purpose of conserving sugar a number of stubstitutes were investigated and methods developed for using various substitutes in the manufacture of soft drinks. A valuable service was rendered the soft-drink industry, since many bottlers who were unable to secure sugar were saved from disaster. Some of the substitutes proved to have such merit that they probably will remain in permanent use. Sugar substitutes for use in baking and cooking were also recommended.

(Continued on Page 32.)

How Candy Is Made

MAKING candy is interesting not only to children but to old and young alike. From dipping bon bons either by hand or by machinery to packing them in pretty boxes, each process demonstrates efficiency and progress. The machine which automatically wraps candy kisses in bits of paper by means of mechanical fingers, itself seems almost human.

It is said that only one in every fifteen persons can acquire the necessary skill to become successful in the art of candy making. Skill, therefore, enters very decidedly into the labors of the candy maker. The housewife who has undertaken to make the plainest kinds of candies knows something of the results to which the slightest errors may lead. At the factory every operation moves along with the precision of clock work and tons of the choicest sweets are turned out without the slightest variation as to perfectness of quality.

Candy making is not surrounded with the amount of ancient history which is attached to so many other big industries. Although it is said to have been known to the early Chinese, comparatively little is known of their connection with the candy-making industry. Rock candy is said to be the first kind produced of which there is any authentic record. It originated in Asia, and some time before the tenth century was carried from there to Europe.

The real candy-making industry had its beginning a little more than a half century ago, when in England confectioners from far and near met at a confectioners' exposition. Since that time the development has been rapid.

In England and in other countries the word "candy" is not used. The general term "confectionery," which is of Latin origin, is employed instead. In foreign countries candies were for a long time the production of the kitchens of the royal households and their use was restricted chiefly to the palaces.

Above — Packing candy in boxes.

To Right—Shows a machine for pulling Taffy.

Photos by Alsop Studios

Photo by Alsop Studios

Revolving Kettles for Coating Jelly Beans and Other Hard Candies

There are two kinds of candy factories—wholesale and retail. The wholesale factory makes candy upon an enormous scale and uses machinery extensively in accomplishing the work. The retail factories do the bulk of their work by hand. Some of the finer candies in both wholesale and retail factories are still made partly by hand; each bon bon, for example, being dipped separately into the chocolate which is to form its covering. Machinery, however, is rapidly displacing hand work even on high grade goods. Machinery of the latest type will put on just as good a chocolate coating on a cream drop as can be put on by hand.

The value of candy, like a building, depends first upon the quality of material used, and second, upon

the amount of workmanship that is required in its construction. There are different grades of chocolate which must be taken into consideration. The placing of nuts upon the top of each candy or forming an initial makes the process slower and more expensive.

The story of a chocolate bon bon from the caldron to the shipping room is typical of the industry of making fine candies. The necessary amount of sugar for the desired amount of candy is placed in one of the large brass caldrons in one of the main rooms of the factory. To this is added a proportionate amount of cream. This mixture is cooked until it reaches a certain stage. To determine just when it has reached this stage is one of the fine points of the business. It is next turned out upon a cooling stone, where it is thoroughly stirred and turned until it takes on the consistency of chocolate creams. After being cooled, it is placed in another kettle and allowed to soften over a slow fire, when it is ready for the flavors, and then for the molds.

For the molding operation a tray is filled with corn starch, tightly packed, then planed off until very smooth and level on top by passing over it what a carpenter would call a straight edge. The resulting smooth surface is indented in the form that the candies are to take by means of plaster of paris casts which are fastened at intervals of an inch or so on a narrow strip of wood. The strip is brought down upon the corn starch surface, making numerous molds or indentations at once. There are at least twenty-five distinct patterns or forms in which chocolate creams are made.

The molds completed, the cream is run into them through an arrangement equipped with specially devised openings, each as far apart as the indentations in the corn starch. The creams remain in the molds over night and the next morning are ready to be separated from the corn starch and go to the dippers or to the enrobing machine. The entire contents of the shallow boxes, both corn starch and creams, are dumped into a large sieve. By shaking the sieve the corn starch is sifted through into another receptacle and the creams are left. This operation is possible in view of the fact that corn starch will not adhere to the creams. Any loose particles remaining are dislodged by a blast of air. All of the foregoing were separate hand processes formerly, but now one machine fills and levels the trays, moves them forward in an endless succession, punches the molds, pours in the cream and discharges the trays at the other end. A machine dumps the trays, sifts off the starch, applies the air blast and delivers the perfectly molded drops, at the same time ejecting the empty trays to be refilled.

Enrobing Machine for Automatically Dipping Chocolates

Rubber molds are also used for many kinds of candy. Where creams are run into rubber molds, many different forms may appear side by side in one square of rubber.

The various creams, now ready for their coating, go to the dipping department. If the process is by hand, girls seated at tables dip the candies into the luke warm chocolate, rolling and turning each cream over and over again until it is thoroughly covered. The chocolate, originally made from the cocoa bean, comes to the candy factory in the form of large cakes and is made soft and sticky by heating. After the dippers have completed their work the chocolate creams are placed on papers to dry, the papers being oiled so that the candies will not stick.

Packing Candy in Pails

The placing of the candies in dainty boxes and their artistic arrangement completes the work. Various other candies are put up, not only in boxes, but also in jars, pails and barrels. Packing is still done almost entirely by hand.

In the making of chewing taffy and other taffies and the shell for buttercups, the mass which comes from the caldron is placed upon a

Photo by Alsop Studios

Dipping Chocolate Creams by Hand

Photo by Alsop Studios

Caldrons in Which the Candy Fillings Are Mixed

marble slab and kneaded for several minutes. It then goes to a machine by which it is alternately pulled out and thrown back upon itself until the air cells are sufficiently eliminated, and until the necessary stiffness has been obtained. While still pliable it can be worked over into many forms and cut into all sizes and shapes. In the making of butercups and numerous other candies, the different colors are produced by taking a portion of the mass that is being kneaded and coloring it, and then in later winding it in strips about the plain portion. Thus, when both are pulled out together into long lengths and cut up into cubes or other forms, the two colors are accurately mixed.

The coloring matter in all good candies is perfectly harmless, being made usually from vegetables.

———

The photographs illustrating this article were made through the courtesy of the Continental Candy Corporation, Chicago, in its plant.

This article is published by courtesy of the Fort Dearborn Magazine.

The Food Value of Some Apple Butter Substitutes Compared to That of Real Apple Butter

W. G. Bowers
Head of State Food Laboratory, Agricultural College N. D.

ACCORDING to U. S. standards, genuine apple butter is the sound product made from apple juice and clean, sound, properly matured and prepared apples, evaporated to a semi-solid mass of homogeneous consistency with or without the addition of sugar and spices and vinegar.

The above definition would lead us to infer that apple butter, in order to comply to the U. S. standards, should contain at least fifty per cent total solids. Tolman, Mason and Bigelow's[1] analysis of various samples of this product, shows total solids averaging from 40 to 60 per cent. Several samples of comparatively fresh apple butter analyzed in this laboratory showed an average of 56.8 per cent total solids. These contained on an average of 25 per cent cane sugar. In this light we feel justified in assuming as a basis of comparison, an apple butter of 50 per cent total solids, 25 per cent or half of the total solids being cane sugar.

The average composition of apples[2] may be taken as: water 83.57 per cent, total solids 16.45 per cent, invert sugar 7.92 per cent, sucrose 3.99 per cent, total sugar 11.91 per cent, total sugar after inversion 12.12 per cent, free malic acid 0.61 per cent, ash 0.27 per cent. The food value of the average apple is 285 calories per pound.[3] By evaporation and bringing the total solids from 16.43 per cent up to 25 per cent, the food value of the apple material would be increased from 285 to 434 calories per pound. The pound of sugar added (1750 calories)[4] would give two pounds of the solids or four pounds of the butter, 434 + 1750 = 2180 calories fuel value for the real apple butter.

The apple butter substitutes whose food value we wish to compare to the above standard were prepared by different food companies (names withheld), laboratory No. 13987, and 14608, respectively.

In the following tables are: the chemical components of these materials, the estimated amounts in ounces in a four and six-ounce can respectively, and also the fuel value of each product summed up at the bottom of the tables:

Lab. No. 13987.

Compound	Per Cent	Ounces in can	Fuel Value
Water	9.15		
Ash	3.15		
Protein	5.80	0.232	
Cane sugar	2.30	0.092	
Dextrose	0.70	0.028	
Dextrin	1.10	0.052	
Vegetable Gums Pectous material.	1.40	0.048	
Corn Starch	62.20	2.608	

Acid (estimated as citric)	5.75	0.230	
Acid (malic)	0.00		
Total oil	1.52	0.061	
Apple oil	0.02		
Waxes, etc.	3.20	0.092	
This analysis would indicate a mixture of:			
Corn starch	50.00	2.00	204.005
Corn meal	40.00	1.60	165.50[2]
Acid, spices pectous material, etc.	10.0	0.40	41.50*
Total fuel value		4.00	410.00

*Assumed

Lab. No. 14608.

Water	8.40		
Ash	2.50		
Protein	3.30	0.198	
Cane sugar	2.80	0.168	
Dextrose	0.80	0.048	
Dextrin	0.10	0.006	
Veg. gum and pectous material	1.53	0.092	
Corn starch	69.20	4.152	
Acid (estimated as citric)	5.60	0.336	
Acid (malic)	0.00		
Total oils	1.52	0.091	
Apple oil	0.02		
Waxes, etc.	3.00	1.180	
This analysis would indicate a mixture of:			
Corn starch	60.00	3.60	366.30[5]
Corn meal	30.00	1.80	186.30[2]
Acid, spices, pectous material	10.00	0.60	062.10*
Total fuel value		6.00	614.70

*Assumed.

Most items of the analyses were carried out according to the most commonly adopted and well-known methods. The determination of the pectins resolved itself into a problem. The presence of some dextrin and a large amount of starch prevented our making use of the Magoon and Caldwell[7] method. A combination of T. Van Der Linden[8] and Charles H. Hunt[9] methods seemed to give best results. Cold water, and the acids already present, served as a solvent, and ammonium sulfate was used as a precipitant.

In the total oils (1.52%), there are the possibilities of corn oil, ginger oil, fruit oils other than apple oil, and apple oil. We determined separately none of these excepting the apple oil. The determination of the rest of them would involve constants that could not be obtained satisfactorily with such a small amount of total oils, and as far as food value is concerned it would make no difference. We arrived at our estimate of the apple oil by the application of the method by which Leach determines artificial apple oil.[10] The oils are both esters of the same formula, the only difference being in the structure. However, this is not the fact upon which we based our belief that we obtained a true value for the amount of apple oil, it is the fact that they are both esters and the other possible oils present are not.

Since these matters are of minor importance in our present proposition, we will leave them for future consideration. Since the food values of the above described packages are the same, we shall make one comparison of this food value with that of real apple butter. Six ounces or the entire contents of Lab. No. 14608, together with about one pound of cane sugar (the same proportion as in the real apple butter), are used to make two quarts of butter, this means 615 calories plus 1750 calories (the value of one-half pound of white sugar plus the value of one-half pound of brown sugar, which makes a total of 2365 calories for the four pounds of substitute butter. The real butter has, according to our assumed values above, 2180 calories.

This six ounce package costs 25 cents, the pound of sugar to go with it 11 cents (equals 36 cents). The cost of the substitute butter would be 9 cents per pound plus the fuel and the work necessary to carry out the directions for making it. Genuine apple butter costs 34 cents per pound on the market at the date of this writing. We would consider it unfair, however, to compare the nine to the thirty-four as relative costs of the substitutes and the real apple butter, for in the real butter we get the finished product and in the substitutes we do not. The raw materials for a pound of real apple butter would cost 11 cents at the present market price. So it appears like a ratio of 9 to 11, for the relative costs of the substitutes and the real products. This ratio holds good for Lab. No. 14608. No. 13987 which is no better, costs 30 cents for four ounces. This would be 45 cents for six ounces of this material. Eleven cents for a pound of sugar to make four pounds of this substitute would equal 56 cents for the four pounds of butter, or 14 cents for one pound. The ratio in this case would be 14 to 11 for the relative costs of the substitute and the real butter.

We feel that the reason for such a variation in the cost of the substitutes, lies in the fact that the public lacks information regarding their chemical composition. The substitute costs at the rate of: ½ cent for the corn starch, ½ cent for the corn meal, a trifle over ½ cent for the acid,[6] less than ½ cent for the spices, not over ½ cent for the pectin; or about 2½ cents for the material in the pasteboard box for one pound of butter. We see here 150 per cent cost over that of the original constituents for the one brand, and 350 per cent for the other brand of these substitute materials.

In conclusion we would suggest that the public runs a risk in choosing the substitute (with its apparently greater food value), at 9 cents per pound in preference to the real at 11 cents per pound, even in the face of the opportunity to reduce the nine to four and one half or five cents. We must bear in mind that the human system has been accustomed to a diet in which there is a portion of the natural fruit products with their natural fruit sugars, and that there is danger of overtaxing the starch digesting capabilities. We should all at least recognize that apparent danger until we arrive at a more definite solution of the problem.

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A Natural Mistake

William Dean Howells, at a dinner in Boston, said of modern American letters:

"The average popular novel shows on the novelist's part an ignorance of his trade which reminds me of a New England clerk.

"In a New England village I entered the main street department store one afternoon and said to the clerk at the book counter:

"Let me have, please, the 'Letters of Charles Lamb.'"

"'Postoffice right across the street, Mr. Lamb,' said the clerk with naive, brisk smile."

The effectiveness and loyalty of women's organizations have never been more plainly marked than in the present fight against the high cost of living in conjunction with the savings division of the United States Treasury Department. Not only have the fair price lists fixed by women been effective but they have been supported by the housewives and have received the approval of honest retailers. In many instances, such fair price lists fixed without consultation with women of the community have been ignored both by the consumers and by the merchants.

He spoke to her quite harshly.

"Why don't you dress before you start?" he said. "I'd just as soon see you put on your stockings in the car as your gloves."

"Yes," she answered simply, "most men would."

What Does a Calorie Mean to You?

How the Housewife Can Figure Out the Cheapest Efficient Body Fuel

"A FAMILY consisting of father, mother, and three children requires about a hundred and twenty 100-calorie portions for an adequate daily diet."

How much would that have meant to the average housekeeper ten years ago? She probably could not have told whether calories were "islands or canned goods," as Mr. Dooley said of the Philippines. Lately, however, they have been talked and written about so much that she at least has a vague notion that they are in some way connected with the value of food to the body and that the more calories she can provide for her family, the better it will be nourished. The United States Department of Agriculture has recently published some tables which make it easier for her to "count the calories" as well as the cost of the food she buys. She can use such tables without knowing anything more about calories, just as she can use electric light without understanding the kilowatt hours that appear in the monthly bill; but calories are neither so mysterious nor so complicated that she can not easily understand what they are.

The word calories comes from "calor," a Latin word meaning heat. A calorie is a unit for measuring quantities of heat just as a yard is a unit for measuring length or a pound for weight. Roughly, a calorie equals the amount of heat required to raise the temperature of a pound of water 4 degrees F.

Heat and Energy Similar

But that isn't the whole story. What we call heat and what we call energy are really different forms of the same force. The heat of the sun, the strength of the winds, the warmth from the fire, the pressure of the expanding steam or exploding gas in the engine, even the flowing of sap in the plant and the contraction of the muscles in our bodies—all these are due to the same universal energy showing itself in different ways. Coal is made up of substances held together by this same energy, and so is gasoline or any other kind of fuel. When the fuel is burned, the energy is set free in the form of heat which in its turn may become the force that drives the machine. In this last form we call it mechanical energy, and we know that a given amount of heat will yield an equivalent amount of mechanical energy. Thus our calorie may represent either enough heat to raise the temperature of one pound of water 4 degrees F. or enough mechanical force to lift one ton about one foot and a half.

Now, food is fuel for our bodies and the energy stored in it can be released in the body and used for keeping it warm or for the work of the muscles, much as gasoline is released and used when the gas is consumed in the motor. The more we exercise our muscles the more mechanical energy we release and the more must be provided by our food fuel. In order to make sure that we are stoking our body engine rightly, we must be able to say both how

	100-calorie portions.	Price	Price per 100-calorie portion.
Vegetables and Fruits			
Potatoes	3 per lb.	cts. per lb.	cts.
Onions	2 per lb.	cts. per lb.	cts.
Cabbage	1 per lb.	cts. per lb.	cts.
Corn, canned	3 per No. 2 can	cts. per No. 2 can	cts.
Peas, canned	3 per No. 2 can	cts. per No. 2 can	cts.
Tomatoes, canned	1 per No. 2 can	cts. per No. 2 can	cts.
Prunes	11 per lb.	cts. per lb.	cts.
Oranges (8 oz. each)	10 per doz.	cts. per doz.	cts.
Bananas (5 oz. each)	11 per doz.	cts. per doz.	cts.
Milk, Eggs, Meat, Fish, etc.			
Milk	6 per qt.	cts. per qt.	cts.
Cheese	20 per lb.	cts. per lb.	cts.
Eggs	9 per doz.	cts. per doz.	cts.
Sirloin steak	10 per lb.	cts. per lb.	cts.
Round steak	7 per lb.	cts. per lb.	cts.
Rib roast	11 per lb.	cts. per lb.	cts.
Chuck roast	7 per lb.	cts. per lb.	cts.
Plate beef	12 per lb.	cts. per lb.	cts.
Pork chops	12 per lb.	cts. per lb.	cts.
Ham	15 per lb.	cts. per lb.	cts.
Lamb	11 per lb.	cts. per lb.	cts.
Hens	8 per lb.	cts. per lb.	cts.
Salmon, canned	7 per lb.	cts. per lb.	cts.
Mackerel, salt	11 per lb.	cts. per lb.	cts.
Oysters	5 per qt.	cts. per qt.	cts.
Cereals			
Corn meal	16 per lb.	cts. per lb.	cts.
Rolled oats	18 per lb.	cts. per lb.	cts.
Wheat flour	16 per lb.	cts. per lb.	cts.
Bread	12 per lb.	cts. per lb.	cts.
Rice	16 per lb.	cts. per lb.	cts.
Macaroni	16 per lb.	cts. per lb.	cts.
Corn flakes	16 per lb.	cts. per lb.	cts.
Beans, dried	16 per lb.	cts. per lb.	cts.
Sugar and Sugary Foods			
Sugar, granulated	18 per lb.	cts. per lb.	cts.
Sugar, lump	18 per lb.	cts. per lb.	cts.
Sugar, maple	13 per lb.	cts. per lb.	cts.
Honey	15 per lb.	cts. per lb.	cts.
Molasses	13 per lb.	cts. per lb.	cts.
Sirup, corn	14 per lb.	cts. per lb.	cts.
Candy	17 per lb.	cts. per lb.	cts.
Fat and Fatty Foods			
Butter	34 per lb.	cts. per lb.	cts.
Lard	41 per lb.	cts. per lb.	cts.
Vegetable oils	41 per lb.	cts. per lb.	cts.
Bacon	26 per lb.	cts. per lb.	cts.
Cream	9 per pt.	cts. per pt.	cts.

much energy our food yields (called its fuel or energy value) and how much energy our bodies use. This is where the calories come in, for we can measure both food energy and body energy in calories.

Facts Simplified

How scientists have learned to do this is a really wonderful story in which famous men all over the world have been playing their parts for a century, marvelously accurate apparatus has been developed and all sorts of interesting facts have been discovered. Thanks to it all, the scientists now really know what are the energy values of our common foods and what are the energy needs of all sorts and conditions of men. And, best of all, they know these formerly mysterious things so well that they can make them of practical use to plain, everyday people who don't understand much about science.

Heat and energy are sometimes measured in other ways than by calories, just as weight is sometimes measured in kilograms instead of pounds, and length in meters instead of yards. In questions of engine fuel another and larger unit, called the British thermal unit, is usually more convenient than the calorie, while in dealing with some types of mechanical work, the unit called the foot ton is often used. But for questions of human food and body energy, the calorie is almost universally chosen as the most satisfactory measure. Sometimes when the material measured yields so many calories that we have to discuss them in tens of thousands, tho 100-calorie portion is used instead, just as dollars are used instead of cents in reckoning prices. This 100-calorie portion means simply the amount of a given food which would yield 100 calories of energy.

Thus we find that the sentence at the beginning of this story really does mean something. It means that the family described in it probably uses up body energy at the rate of about 12,000 calories a day and needs food fuel of the same energy value.

Choosing Cheap Fuel

Body-fuel, like other kinds of fuel, costs money, and the problem is to get the amount needed for the smallest sum possible; which means choosing food rather carefully. A man running a sawmill in the cypress swamps of Louisiana or the Michigan woods would have to pay a lot of money for enough anthracite coal to run his steam engine, but he can take his fuel from the sawdust heap and the slab-pile, and so save money.

Much the same situation exists with regard to the fuel for the human engine. If our family of five bought its 120 100-calorie portions all in sirloin steak at 50 cents a pound, the cost would be $6.00 a day. If it bought them all in white potatoes at $1.80 a bushel, the cost would be only $1.20 a day.

How to Use Calorie Tables

Other things than body fuel are necessary in human food. Not all of the necessary body fuel may safely be taken from potatoes nor yet all of it from beefsteak. Scientific investigations have shown that of the 120 100-calorie portions necessary for the family of five, about 24 should come from vegetables and fruits, 36 from milk, eggs and meat, 30 from cereals and legumes, 12 from sugar and sugary foods, and 18 from fats and fatty foods. If these amounts are used as a guide in planning the meals of a healthy family, there is little need to worry about their getting the right kinds and quantities of foods.

Now a 100-calorie portion of some meats costs a good deal more than a 100-calorie portion of other meats. This is the case too with vegetables and fruits, cereals, fats and sweets. The cheapest food per pound is not always the cheapest food per 100-calorie portion. In this day of high prices, the housewife is interested in knowing what foods that will adequately feed the family can be bought cheapest — figured on a sustenence basis rather than on a pound or pint basis. And that is what the tables prepared by the Department of Agriculture do for her.

By using the tables, she can determine the price of a 100-calorie portion of a particular food. All she has to do is to insert the price per pound or bushel at the proper place in the third column and divide it by the corresponding figure in the second column.

Here's An Example

To illustrate: Suppose the meat market man tells her that sirloin steak is 50 cents a pound. She writes "50" opposite sirloin steak in the third column. Then she looks in the second column and finds, opposite sirloin steak, "10 per pound." She divides 50 by 10. The quotient is 5. Five cents, therefore, is the price of a 100-calorie portion of sirloin steak. In exactly the same way she can find the cost per 100-calorie portion of any food. And what is more, if she gets in the habit of thinking in 100-calorie portions as well as in pounds and bushels, she will very soon know how much such a portion of steak or apples or macaroni represents and then she will be able to estimate easily whether or not she is getting what her family needs and at the best prices.

Potato Scab

Perhaps there is no disease of the potato more common than potato scab. It has been called variously Scab, Scurf, Spot and Rust, but in order to distinguish it from the less well-known Powdery Scab it seems advisable to use the name Common Scab for it, says the Pennsylvania Department of Agriculture, Bureau of Plant Industry.

There is a widespread belief that scab does little or no damage to the potato, since it affects only the outer surface to a comparatively small depth, and does not rot the tuber or injure the food qualities. This belief is far from correct. It is true that the scab spot damage is quite shallow, but it is also true that a very thin layer from the outside of a round object contains a suprisingly large proportion of its volume; consequently the extra thickness of peeling that must be taken to get below the scab spots takes away far more of the food value than one would suspect. In peeling a round scabby potato or ordinary size the slightly deeper peeling may remove 12 to 16 per cent more of the potato than if there was no scab present. The reality of this loss can likewise readily be determined by peeling equal weights of clean and scabby potatoes and then weighing the peeled lots.

Buyers of potatoes should remember this point and insist on clean skinned tubers, while on the other hand sellers of scab-free potatoes would be perfectly justified in claiming for their product a higher price than is being paid for scabby stock.

Undernourishment is not confined to the slums. Many a little Tony or Pietro, with his bowl of thick soup and hunk of dry bread, topped off with an apple or an orange, is better fed than numbers of children in well-to-do families. The latter are too often allowed to choose what they will or will not eat, and to select food badly suited to a child's stomach or that is lacking in nourishment. When this happens they are being starved just as much as if their parents, because of poverty, were obliged to give them too scanty a ration. Soggy breads, fried meats, fried potatoes and heavy pies are responsible for many underfed children.

A Strange History

Develops a New Food Program

By John T. Ashcraft

BACK in 1886 butter was understood to be pure and clean, and oleomargarine to be impure and filthy. Notice the definitions of these two foods in the Federal Oleomargarinc Act, August 2nd, 1886:

"Sec. 1. *Butter* shall be understood to mean the food product usually known as butter, which is made *exclusively from milk or cream or both,* with or without common salt, and with or without additional coloring matter.

"Sec. 2. Certain manufactured substances. . . .shall be known and designated as oleomargarine, namely: the substances heretofore known as oleomargarine, oleo, oleomargarine-oil, butterine, lardine, suine and neutral . . . all lard extracts, and tallow extracts, and all mixtures of tallow, beef fat, suet, lard, vegetable oil, annotto, intestinal fat and offal fat, made in imitation or semblance of butter."

Now the race begins. There is no Meat Inspection Act. There is no Federal Food and Drugs Act. Butter begins the race without any limitations except the above definition, which is inviting in every respect. Oleomargarine begins the race, not only with an offensive definition, but handicapped by the most burdensome revenue regulations and the most violent prejudices.

By 1902 butter was lagging in the race and becoming corrupted. Oleomargarine was gaining and being purified. Something must be done by the butter interests, so on May 9th, 1902, they secured the Adulterated Butter Act, an unique piece of legal literature, which defines *adulterated butter*

"to mean a grade of butter produced by mixing, reworking, rechurning in milk or cream, refining or in any way producing a *uniform, purified* or *improved product,* from different lots or parcels of melted or unmelted butter or butter-fat, in which any acid, alkali, chemical or any substance whatever is introduced or used for the purpose or with the effect of deodorizing or removing therefrom rancidity . . . or any butter in the manufacture or manipulation of which any process or material is used with intent or effect of causing the *absorption of abnormal quantities of water,* milk or cream."

On the same day the butter people secured an amendment to the oleomargarine law, levying a tax of 10 cents per pound when artificially colored. The terms of the Meat Inspection Act were extended to oleomargine and adulterated butter.

The race starts anew—butter still being the food product made *exclusively* from milk or cream, or both . . . . with or without additional coloring matter. No inspection by the U. S. Department of Agriculture. No labels. No revenue handicaps. Of course, no one took out license to do an "adulterated butter" business, as a food so branded could not be sold no matter how uniform, purified or improved it might be.

In those days, although butter contained an average of 84% to 85% butter-fat, nevertheless, to allow due tolerance for errors, the U. S. Department of Agriculture promulgated a standard of 82½% *minimum* butter-fat.

Notwithstanding average butter contained 11% to 12% moisture, the Bureau of Internal Revenue promulgated a regulation providing that butter containing less than 16% water should not be considered as containing "abnormal quantities of water."

Competition, desire for gain, lack of Federal inspection, and the application of fine scientific processes to evil purposes, have resulted in two definite great frauds on the public:

(a) The big butter makers abandoned the purchase of what was known as farmer butter, which they had been mixing and reworking so as to produce a uniform, purified or improved product, by the use of neutralizers and deodorizers, and began the purchase from farmers of hand-separator cream. They claimed that the adulterated butter law does not apply to butter produced by mixing, refining or in any way producing a uniform, purified or improved product from different lots or parcels of *cream* by the use of neutralizers and deodorizers, out of which idea the great Centralizer System has grown. In this interpretation, the Bureau of Internal Revenue seems to have acquiesced, with the result that the Department of Agriculture has declared that butter when made under such conditions as prevail in the majority of creameries cannot be said to be wholesome and free from danger to human health; and in the recent hearings before the joint committee on definitions and standards it was shown that a majority of all creamery butter now produced is made by the use of neutralizers and deodorizers, and sold as "Fancy Creamery Butter." It has also been shown that much of this butter is made from the milk of diseased cows and stale and filthy cream unfit for human food, and the solicitor of the Department of Agriculture has declared such butter to be adulterated butter and liable to the licenses, taxes and penalties imposed by the Adulterated Butter Law.

(b) Processes for causing absorption of abnormal quantities of water have been discovered and applied, so that the moisture content of butter may now be regulated to within a fraction of 1%. Now practically all butter contains 15½% or more of water, instead of 11% or 12%, as when this law was enacted. Thousands and thousands of pounds have been seized during the year by the U. S. Department of Agriculture under the Federal Food and Drugs Act, because it fell below 80% in fat. The moisture fraud seems to have become so gigantic that the department found it hopeless to undertake to enforce its *minimum* fat standard of 82½%.

So butter, uninspected at the source, unfairly labeled, favored by the tender sentiment of ages and free from all revenue handicaps, degenerates and lags in the race.

On the other hand, oleomargarine, inspected at the source and fairly labeled, has improved in quality and accelerated its race for the favor of consumers, notwithstanding violent prejudices and heavy revenue handicaps. The beauty, wholesomeness and nutritious value of the once despised vegetable oils has been discovered, and their special adaptation to the production of pleasing and palatable oleomargarine has been thoroughly demonstrated. The regulations of the Bureau of Animal Industry provide that the milk and cream used in the preparation of

oleomargarine shall be pasteurized products, and they further provide that proprietors and operators shall also give to the bureau advance information of the sources of supplies of butter intended for use in preparing oleomargarine. All with the result that the use of oleomargarine has greatly increased by all classes of people, including dairy farmers themselves; and it is believed from a careful investigation of the records that very few, if any, violations of the law have been reported against oleomargarine makers or distributors during the year.

It, therefore, seems a new crisis has arisen in the butter industry. Instead of proposing inspection, honest labels and improvement, it is now reported in the dairy journals that these centralizers want the beautiful definition of butter found in the Oleomargarine Law amended, to fit their product, as follows:

"Sec. 1. Butter is hereby defined to mean that heterogeneous food product usually known as butter, and which is made from milk or cream, or both . . ."

How the mighty have fallen! Butter is no longer to be the food product made *exclusively* from milk or cream. It has become a heterogeneous food product—that is, "unlike in character or quality, structure or composition; consisting of dissimilar elements or ingredients of different kinds"—made from old cream by the use of lime, washing powder, saltpetre, etc.

It is proposed to have this degenerated status of a majority of creamery butter fixed by law for all butter.

But fixing the degenerated status of butter by law is not all of the centralizer's program. Unwilling to run a noble race themselves, under the watchful eye of the Department of Agriculture, they now want to *increase* the *handicaps* upon *oleomargarine* so that it may be compelled to slacken its pace for their supposed benefit. Therefore, they have now inaugurated three strong agencies in Washington, co-operating with each other for the avowed purpose among other things of having the oleomargarine law so amended as to absolutely prohibit the use of the delicious prime summer yellow vegetable oils in the production of oleomargarine and also artificial coloration. In this way the producers of these oils are to be deprived of an excellent market. Consumers are to be deprived of a most desirable element in their food supply and thus be compelled to buy *heterogeneous* butter at ever-increasing prices.

A new and strange food program indeed!

Centralizers' Program: Legalize *heterogeneous* butter, continue artificial color. Require no inspection, no labels. Prohibit yellow oils in oleomargarine, prohibit artificial color. Retain licenses, bonds, taxes and reports on *white* oleomargarine.

Vegetable Oil Producers' Program: Remove all revenue burdens from all wholesome, clean foods. Prohibit all diseased, filthy foods. Enlarge powers of Department of Agriculture as to containers, brands, labels and inspection. Require sanitary containers, true labels and brands showing character of product and inspection at source. Freedom to produce best and most appetizing food combinations which science and art may now or hereafter make possible.

Which program will consumers and the Congress choose?

Oleomargarine in College

The big Stock Show recently held in Chicago included a food exhibition staged by the Department of Food Economics of the State Agricultural College at Ames, Iowa, with the object of showing the food value of various products in common use. Many visitors expressed surprise at seeing oleomargarine classed with creamery butter in the group of nutritive fats, and at the explanation of the demonstrator that oleomargarine containing oleo oil, which is made of beef fat, had the much discussed vitamines.

Since 1915, the production of oleomargarine has increased almost threefold in this country. The acceptance of oleomargarine on the table and in high-class cooking has been urged by all doctors and dietitians, as well as by all teachers, writers, demonstrators and lecturers on domestic science. The use of oleomargarine represents a steady, healthy growth, backed by the best opinion of the community. It is due, therefore, that the dealers of this country handle the already established demand for this product in the most helpful manner possible, in their own interest and in the interest of the manufacturers.

Keep up the high standards of oleomargarine. Introduce to your trade only good, pure brands that are sold under a trademark that the public recognizes as reliable, and used only on products of the first grade. Thus there will be no prejudice engendered in the minds of consumers by the experience of an inferior brand.

Take as good care of oleomargarine—and this is equally true of the nut-butter—as you would of any high-class dairy product. Impress this point on your customers, that the best oleomargarines are high-grade products and should be cared for accordingly. Oleomargarine should be kept in a cool place and away from any food that is capable of lending taste or odor.

Federal Chemists Watching Rainbow Sugar

That all samples of so-called "rainbow" sugar so far examined by the Bureau of Chemistry have been found to be colored by harmless dyes is the statement of the United States Department of Agriculture, whose pure food experts began testing samples of this product soon after it appeared on the market. Repeated inquiries coming to the bureau from many parts of the country seem to indicate that considerable quantities of this sugar have been supplied to grocers.

The department states that in accord with the provisions of the Food and Drugs Act it will continue to examine samples of this tinted product to ascertain whether or not harmful dyes are used in the future. Only colors known to be harmless have been used in the samples tested and under the Food and Drugs Act their use can be continued so long as they do not conceal inferiority. The sugar so far examined is harmless, sound, and not inferior, so that the practice of the refiners does not conflict with the provisions of this law.

The method employed in tinting the sugar examined is relatively simple and adds very little to the cost of the product and nothing to its food value. Refiners state that the shortage of sugar has created an opportunity to place on the market considerable reserve stores of this colored product which ordinarily is used only for confections. They deny that they have colored their stocks of white sugar in order that a higher price might be demanded for it.

New York to Get Cheaper Milk in Paper Bottles

One large distributing company which serves the east side will begin the delivery of milk in waxed paper containers at 16 cents a quart, 2 cents under the prevailing rate, the department of health announced.

Nationally Advertised Articles the Most Profitable for Jobbers to Handle*

The Jobber Should Know on Which Side His Bread Is Buttered

By J. S. Goldbaum

Sales and Advertising Manager, Fels & Co., Philadelphia

IT was not so many years ago that the question was widely asked: Whether jobbers should or should not handle advertised goods.

Some jobbers said "No" and continued to make money along old lines. A great many more said "Yes" and made still more money. Jobbers who made money handling unbranded goods, made nothing more than the money at the time. Those who encouraged the handling of advertised trademarked goods created a piece of machinery that automatically made money for them. They built up for themselves permanent good-will value as distributing organizations.

To be sure, when jobbers were originally asked to make the decision between unbranded articles and nationally advertised products, advertising had not yet brought the changes we now see on every side. In those days the average grocery store was in no way comparable to the clean and inviting place where the present-day housewife buys her foods and groceries. Bulk goods, with their mussy and unsanitary surroundings, engaged and required the entire activities of the average retail grocer. His business was one of drudgery and petty work. His outlook was not reassuring. He could see no further than the day itself, and sufficient unto the day were the profits thereof.

But advertising has caused a revolution in merchandising. Package goods displaced bulk goods and a new era came into being. Package goods meant less work and more profit and a cleaner, more cheerful business in every way. A new pride in the grocery business was born.

Today's grocer thinks well of his business. He and his fellows have organized locally and nationally to further their own interests. The modern grocer's spirit is kindled with the optimism and cheer he sees leaping from the advertising pages of his newspapers and magazines. He even finds entire magazines devoted to the subject of better housekeeping, for a new pride in the housekeeping business has also come into being. Advertising has indeed brought about a different and improved viewpoint in the business of supplying the housewife with her daily needs.

Through advertising, the goods sold in grocery stores were brought to a higher standard of quality. Former President Green, of the National Biscuit Company, often stated that the first advertising of Uneeda Biscuit was so much better than the product itself, that his master bakers set about to make better crackers that they might meet the claims made for them. And when the sales force noted the improvement in the quality, they went to the task of selling with renewed vigor and enthusiasm. Other cracker bakers followed suit and, as a result, practically all cakes and crackers sold today are as clean and fresh as they are wholesome. The modern grocer would not handle any other kind.

The wise jobber follows the currents of modern business. He sees the advantage of working along the lines of less resistance. He meshes in with the good will established by the manufacturer through his national advertising. He makes that good will serve him as it should. He adds to his prestige by approving and offering for sale the things that stand the searching test of publicity. He takes as his allies the articles that have begotten the friendship of millions.

The jobber who is groping in the dark for unbranded goods has no such leverage. He has no help, no co-operation in the form of good will and no pull from the consumer. His is an all-push business. The magnetic factor of attracting the consumer is left out. He strives for the immediate profit and makes no provision for the future. Then when a lean year comes he has no reserve. If he were handling a maximum of nationally advertised goods, the manufacturers of these goods, advertising more heavily in a lean year, would bring up the level of his sales and help do some of the pushing for him.

And likewise the jobber who builds up his business on private brands. He loses a great amount of assistance which would cost him nothing. He pays a higher price than is necessary for doing business. His investments are greater and his turnovers slower. He wears out the patience of his customers by arguing that they take a private brand in place of the one that is on the lips of so many of the housewives that come into the retailer's store.

Private brands are a detriment not only to the jobber, but to the retailer as well. To quote for a moment from the address of a wholesale grocer himself. F. C. Gaylord, of Horner-Gaylord Company, Clarksburg, W. Va., speaking before a meeting of wholesale grocers:

"The jobbers' private brands have done more to hurt the retailer than any other one thing. The retailer's store is often filled with private brands unknown to the buying public. Jones sells him Jones' Oats; Smith loads him up on Smith's Oats, and Brown gives him a dose of Brown's Oats, and the result is that he spends too much time trying to sell Smith's to Mrs. Flaherty when she calls for some well-known advertised brand. And, worst of all, when invoicing time comes around, he has three cases of private brand oats filled with bugs—orphan oats with no daddy. Did you ever lose money on well-known advertised brands? No, you never did. They are always worth 100 cents on the dollar—they have a mother and father—somebody with a reputation right behind them. I hope to see the day when we have nothing in our house except advertised brands."

Isn't there a great deal of truth in what Mr. Gaylord said?

One of the big lessons the modern

*Address before the American Specialty Manufacturers' Association.

retailer has learned is that success in business is now largely a matter of service, selling customers what the customers want to buy. If only some jobbers could change places for a while with the corner grocer and feel the ground swell of appreciation for nationally advertised goods!

The function of the jobber is primarily that of distributor. Most manufacturers want to use the splendid machinery of distribution the jobber has set up and are willing to pay for the use of that machinery. The jobber can assemble a more efficient selling force in his field and at less cost than a manufacturer. He is the master of local credits. He is the strong right arm of the manufacturer and his strength is the greater when wielded in behalf of articles of known and established merit. Encouraging relationships profitable to the jobber and manufacturer both have been established where the jobber has had the vision and the experience to see the value of helping move those goods which the manufacturer has largely sold through his own advertising effort.

Safety Through Concentration

An outstanding factor in favor of the wholesaler who wishes advertised articles is that of the safety and success that go with concentration in his own chosen business of *distributing* merchandise. Variable expenses of manufacture, labor difficulties, slower returns on capital invested, these are among the bugbears that today loom up larger on the horizon of the private brand jobber-manufacturer than ever before and they are giving him a serious time of it in keeping the balance on the right side. The jobber who does not manufacture his own private brand goods, but has them made for him, is likewise standing on shifting ground. For the war forced many factories under Government supervision to cut down the production of privately-marketed goods. All evidence seems to prove that with the resumption of business approaching the pre-war basis, many factories have refrained from going back to private labeling. In fact, indications lead to the conclusion that a great many plants are standardizing their families of products, adopting trade names and loudly proclaiming their merits in advertising campaigns of great scope and volume. The jobber who previously found it difficult to wean himself away from the private brand habit will do well to recognize this important change in the attitude of former private brand manufacturers and set his own house in order accordingly.

The merchandising methods now being sucecssfully employed to sell the advertising of a commodity through jobbers' salesmen furnish still another chapter in the story of why it pays the jobber to handle advertised goods. Advertising is a new link in the chain of promotion that is being vigorously forced by the up-to-date advertising agency and by the advertising departments of concerns that are selling their goods nationally by way of a trade name. To the manufacturer's own message of information about his trademarked goods, add the unsolicited and consistent editorial appeal in publications read by millions of housewives, to buy goods of approved quality and known standards and you have an accumulating influence on the trend of purchasing that cannot be denied. Jobbers' salesmen are being shown how they can make national advertising aid them to get more orders. So cleverly is that work being done that once the jobbers' salesmen fully comprehend the real usefulness of advertising in their own daily tasks, they urge their chiefs to add other advertised lines. Quick turnover, steady sales, large volume, are attractive terms that spell profits to them.

Helpfulness of Co-operative Advertising

The increasing use and influence of co-operative advertising by groups of manufacturers is another educative force that is working against the jobber who specializes on unknown brands. These campaigns already familiar to all of you are too numerous to mention specifically, but so effectively are they teaching the public to ask for this or that grade of a commodity that dealers cannot afford to be without them in their stocks.

Further, the modern grocer is working toward specialization and the tendency is to reduce the number of items carried. He cannot carry more and more stock and still make money. Hence he is giving serious thought to his selection of varieties of brands. He knows he can make quicker turnovers on the advertised staples and his ax will fall accordingly. The far-seeing jobber will plan his business to take care of this tendency of today.

A thought for the jobber, who does not push advertised goods, lies in the increasing business of mail-order houses. These houses sell nearly three billion dollars' worth of goods a year — somebody's goods — and in increasing percentage of it is made up of nationally advertised products. Mail-order houses find that the public is so insistent on having commodities of known value that to get them the consumer is willing to pay the regular price plus postage. As a result, advertised goods are every day invading the territories of indifferent jobbers who could easily divert the channels of profits into their own hands.

Not the least of the permanent benefits made available to jobbers through advertising is the extending of the season of the sale of a particular line of goods. The story of dates is perhaps one of the most striking. You all know the way dates used to be sold—in bulk—and then only at Thanksgiving or Christmas time. Along comes the sanitary package, expert care in selection and continuous advertising. Dates today are almost as widely eaten on the summer picnic as they are during the Christmas holidays. Many other items might be similarly mentioned. Jobbers cannot help but benefit from such conditions and such tendencies.

Let us analyze for a moment the charge often made by promoters of unbranded merchandise that advertising adds to the cost of living. By advertising, the manufacturer of a new and better product establishes in the public mind the name, use, quality, price and trade-mark of his goods. He creates a big market which makes large production possible. Large production lowers manufacturers' costs. Large purchases lower the price of raw materials. By advertising a manufacturer paves the path of the salesmen toward easier and larger sales. Hence sales cost per unit decrease. He is enabled to do business for a lower *total* cost than the man who does not advertise. Therefore he can make a lower price to the consumer. And because of competition it is to his interest to do so. Because his profits depend so largely on volume of sales, he is very loath to take chances with anything that will disturb volume.

During that hectic period in 1917 when prices of grocery products went skyrocketing, it is a matter of common knowledge that manufacturers of advertised articles shaved profits to the last degree of thinness before changes in prices were made and when advances had to come as a last resort they were figured very closely. The non-advertiser had less at stake. No good will with the consumer to maintain, no promises to keep because his name and his goods were not widely known among the general public. The invitation to set higher prices was too tempting to decline.

The jobber in handling advertised

(Continued on Page 34.)

Food Value of Vegetables

VEGETABLES enter largely into the composition of the diet of all countries, and are necessary to health. The vegetable most commonly consumed is the potato. It is claimed to be of American origin, and was brought to Europe by the Spaniards early in the 16th century. In 1565 Sir John Hawkins introduced it into Ireland, and in 1585 Sir Francis Drake brought it to England. In 1718 it was mentioned as being of "little note." In Wise's "Complete Gardener," published some years later, it was not even alluded to. The potato became fashionable in Ireland earlier than in England, and soon was adopted as the staple food of the peasantry of the former.

The constituents of the potato, according to Letherby, are as follows:

Nitrogenous matter	2.1
Starch, etc.	18.8
Sugar.	3.2
Fat	0.2
Salt (such as malates, tartrates, and citrates)	0.7
Water	75.0
	100

Owing to the small amount of nitrogenous matter, it does not form by itself a suitable food. It should, therefore, be eaten with articles rich in nitrogenous matter, such as meat, fish, eggs. We may observe also that both biscuits and peas contain much nitrogenous matter, the proportion in the former being 22.7 and in the latter 15.0 per cent. The Irish take buttermilk with their potatoes, the former having twice the percentage of nitrogenous matter of the latter.

The potato possesses great anti-scorbutic properties, and its starch is very digestible. Owing to the small proportion of salts and the large proportion of water, from 8 oz. to 12 oz. at least of potatoes should be consumed daily if no other vegetable is eaten. Young potatoes are more indigestible than old potatoes. Potatoes may be cooked either boiling, steaming, frying, stewing or baking. Steaming is far preferable to boiling, as in the former process less waste occurs. When boiling method is applied to, the skins should not be removed, as peeling promotes the extraction of the juice. A little salt added to the water checks the escape of the saline constituents. There is great art in boiling potatoes, and the process is seldom thoroughly well performed. It is related that, when the committee of a fashionable London club were examining a large number of candidates for the cook's place, the greatest gourmand of the committee put as his first question, "Can you cook a potato?" There are many dishes of which potatoes are the base, and the French have a far greater variety of ways of cooking and serving theirs than any other nation.

Among most commonly used of vegetables are onions, carrots. parsnips, common artichokes, turnips, cabbages, cauliflowers, artichokes, asparagus, spinach, peas.

The onion is rich in flesh-forming material, having, when dried, about 25 per cent of gluten. The following is Church's analysis of a moderately sized onion:

Water	91.0
Albumen	1.5
Mucilage and pectose	4.8
Fat	0.2
Cellulose and Lignose	2.0
Mineral matter	0.5
	100

For one part, by weight, of flesh-formers in fresh onions, there are, according to Prof. Church, about 3½ parts of heat-givers. The strong smell and taste of the onions are due to a pungent volatile oil rich in sulphur.

The onion is of the lily order and is a native of the Levant.

Carrots were introduced into England during the reign of Queen Elizabeth. They contain no starch, and for one part of flesh-formers there are ten of heat-givers. The following is Church's analysis:

Water	89.0
Albumen	0.5
Sugar	4.5
Gum and pectose	0.5
Fat	0.2
Cellulose and Lignose	4.3
Mineral matter	1.0
	100

Parsnips contain the same proportion of flesh-formers and heat givers as carrots. They contain less water and a good deal of starch. They have been cultivated since the days of the Romans.

Turnips contain one part of flesh-formers to eight parts of heat-givers. There is little nourishment in the turnip, for in 100 part 92.8 are water.

Cabbages and Cauliflowers contain 90 per cent of water, but, as regards their dry matter, are rich in flesh-formers. Cauliflowers were known to the Greeks and Romans, but were little cultivated in England till the end of the 17th century.

Artichokes contain 76.00 per cent of water, 3.1 nitrogenous matter, 14.7 sugar, 0.2 fatty matter, and 1.3 mineral matter. They are less digestible than the potato. The common artichoke is eaten more as a dainty than a means of nutrition. Very little of it is also consumed at a time.

Asparagus belongs to the lily order, and in its wild state is a sea coast plant. It is remarkable for containing a special principle called asparagine, which is diuretic, and gives a special odor to the urine. Several other vegetable products are dressed and eaten like asparagus, for example, the "Prussian Asparagus" of Bath, which consists of the flower stalks of the Arnithologum Pyrenaicum and the stalks of the salsify. The young buds of the hop are very similar in taste to asparagus.

Spinach is supposed to be a native of Arabia. It was introduced into England in the 16th century. It is wholesome, but slightly laxative. There is much nitre in its composition. The Romans—so Pavy tells us—ate the leaves of the mallow cooked in the same way as spinach. We read with horror of the French peasants, in times of distress, during the reign of Louis XIV, having been compelled to eat nettles. The young shoots and tops of the common stinging nettle resemble, however, spinach very closely when cooked in the same way.

Green Peas contain a considerable quantity of sugar, and the albuminous matter in them is more easily digested than when found in dry peas. In the 16th century it was an expensive article in England.

Try This Brand

"If Eggo doesn't make your chickens lay—why they're roosters," says a sign in a feed store. That's the kind of confidence to have in your line. Then if the people don't buy your brands, it is because they can't buy any kind.

Selling the Army Surplus

By Homer Joseph Dodge

He who does not remember the country town and cross-roads general emporiums whose signs said they sold "everything from wooden toothpicks to lumber wagons," has a short memory. And he who travels about in rural communities doubtless may find many such institutions still operating under the careful management of some substantial merchant whose cronies call him "Squire" and who ministers to the wants of the countryside with the same kindly care exercised by the rural physician.

But that the government of the United States should ever enter this field—and on an extensive chain store scale—would have seemed chimerically socialistic before the war. And yet one of the most interesting activities now being conducted by Uncle Sam is the operation of twenty-five army retail stores at which the vast surplus of supplies accumulated in expectation of two or three years of war is being distributed to the public. And in addition to enabling the War Department to dispose of its surplus, the project is dealing a heavy blow at the cost of living because the great variety of goods offered the public gives opportunity for material savings.

In the past, army surplus usually has been regarded as legitimate prey for favorites of government officials —that is, so far as many countries and governments are concerned—it being assumed that the money spent for army supplies was charged off and that the goods were not regarded as real assets. Any junk dealers or contractors, with lobbyist friends who expected the American government to follow this course have been woefully disappointed, for in many cases army surplus has been sold since the armistic at prices above the market at which it was purchased.

In fact, such good salesmanship has been shown by the officers in charge of disposing of this army surplus that on the whole about 90 per cent of the original purchase price has been realized on the goods sold so far. Whether this figure will be lower or higher when the books are finally closed must now be a matter of conjecture, as there remains millions of dollars' worth of goods to be disposed of.

The chain of army retail stores opened September 25. The experience was as new for the public as for the government. The merchant and the customer know what a brisk business man is the ordinary jobber to the trade. In this instance, the man occupying that position is a zone supply officer. Usually he is an army officer well up in the scale of military rank, and his office and his business are conducted along quite military lines. He sends out no calendars in colors adorned with pictures of pretty girls, but his stationery bears upon it the insignia of the greatest republic in the world.

The great central depots, in which were accumulated the huge supplies of goods of every description preparatory to issuance to the great military camps and cantonments and to shipment overseas, take the place in this system, of the wholesalers' or jobbers' warehouses. From these central supply depots the army surplus is sent out to the retail stores situated in territory naturally tributary.

The man who operates one of these army retail stores is far from being a typical storekeeper; he is an army officer—usually a major or a colonel. For assistants they have captains and lieutenants.

Joe, the bookkeeper, gets down to work with a little trace of sleep still lingering about the corners of his eyes and says "Morning, sir," to the proprietor or manager of the big store with which the average American is familiar. Joe, the doughboy, —or perhaps he is a snappy second lieutenant,—gets down much earlier with the echo of the morning trumpet in his ears and salutes his superior officer at the beginning of the day in the army retail stores.

All through these stores—and some of them are very big ones—officers and soldiers predominate. The orders were to use the army personnel where it was adequate, and so for floorwalkers we find neatly uniformed captains or lieutenants, and about the floors, offices and warerooms, shipping rooms and platforms there are lieutenants, sergeants, corporals and privates. So far as possible, enlisted men who have had previous training in mercantile establishments are selected for the stores. In some cities where the soldiers were too few or too inexperienced, civilians have been hired both for office work and for work at the sales counters and in the shipping rooms, but the policy has

UNLOADING THE FIRST ARMY FOOD SOLD IN WASHINGTON, D. C.
Photo Copyrighted by Underwood & Underwood

been to use the uniformed men so far as possible.

The stores have been established in twenty-five cities where the War Department felt the best results would be obtained, with respect both to disposing of surplus and to accommodating the general public. Location of the stores has been dictated by the best business judgment. Where the government has owned buildings or had them under lease at suitable points for retail stores, these structures have been utilized, but where no such property was already available, it has been acquired in the open market.

We have compared the old-time country general store with the army retail stores. What makes them comparable is not location, for the army retail stores are all in big cities, but the wide variety of goods offered for sale. Nowadays, in the city, unless you go to a department store, you go to specialty stores for special commodities. But the army retail store carries a range of stock very much like that of the country store. You will find no luxuries in these stores, any more than you will at the cross-roads emporium. In the army there are no luxuries; therefore, there is no surplus of luxuries to sell.

The list of stock is a long one, but a few selections will illustrate the wide range and the relatively low prices:

New cloth top arctics, a pair	$1.60
Film albums, each	.75
Blankets, wool, each	5.00
Brooms, stable, each	.75
Candles, a pound	.20
Folding chairs, each	.75
Drawers, wool, winter, a pair	1.00
Drawers, summer, a pair	.25
Gloves, knit, a pair	.20
Hatchets, each	1.00
Knives, table, a dozen	.48
Lariats, each	.65
Overalls, a pair	2.50
Raincoats, each	5.25
Socks, wool, a pair	.25
Gas masks, each	1.00
Bacon, a case	2.75
Corned beef, a can	.23
Baked beans, a can	.04
Lemon drops, a pound	.25
Flour, a sack	4.00
Bull Durham smoking tobacco a package	.04
Flashlights, each	.60
Wagon jacks, each	3.50

The list goes on almost endlessly and includes a great range of food; includes, in fact, almost all the kinds of rations which, in this war and in this army, were the most various ever known to the soldier. Clothing of every kind used by the soldier and many implements also are available.

Most of the goods are sold over the counters in the twenty-five stores, but the management of the chain has also inaugurated a system of sales by parcels post which is bringing a great amount of trade.

The over-the-counter price and the parcels post price are the same.

SALE OF ARMY'S APPLES, TIMES SQUARE, NEW YORK

To order by mail from a store, you must be within its district. Mail orders must be addressed to the store direct and not to the postmaster or to any other official. All mail orders must be accompanied by cash, postal money order or certified check. Postage stamps and uncertified checks will not be accepted. All goods bought over the counter must be paid for in cash.

Still another method of distribution has been arranged by the army retail stores. In view of the increasing popularity of the community store or community buying center, especially since municipalities have made such special efforts to lower the cost of living, the War Department has put into effect a system whereby municipalities and community buying organizations may buy in bulk.

Bulk orders may be placed with the retail store in the district in which the municipality, municipal selling agency or community buying association is situated. Goods will be delivered by freight, f. o. b. destination. A discount of 10 per cent on the entire bill of goods ordered will be allowed the purchaser to cover overhead expenses entailed in re-distributing the commodities to the members of the municipalities or buying organizations.

The representative of the purchaser in bulk who places the order is required to give the officer in charge of the store to which the order is sent due assurance that the goods acquired will be delivered to ultimate consumers at the prices fixed for individual sales in the stores.

The bulk sales plan does not apply to renovated goods. In almost every instance these wares are as good as new, but it was decided that the ultimate consumer should personally examine them before buying.

Some commodities listed on the general inventory are not available at all of the retail stores, but have been concentrated in certain central supply depots. For the War Department to send some of these goods to all the stores would be impracticable.

(Continued on page 37)

Interesting Food Statistics

A prominent business man who had closely co-operated with the government during the Food Administration and who is in a position to write with conviction, decidedly disagrees with the suggestion of Congressman Fitzgerald that the billion-dollar wheat guaranty appropriation be employed for this purpose. Such a procedure would not bring practical results except through its psychological potentiality. Our wheat consumption last year was 4.6 bushels per capita. At the Chicago basic price of $2.26 the total cost per capita would be $10.39 or .0285 cents per day or about one cent per meal. It is, therefore, apparent that a reduction of one dollar ($1.00) per bushel in the price of wheat through using the appropriation would only reduce the average daily wheat bread expense to about .016 cents for each individual. Assuming that the gross consumption of all other cereals would equal the average wheat consumption, it will be seen that the total cost would hardly reach 6 cents per day per individual for all cereals and at their present value. The manufacturing and distribution costs are not included in this computation inasmuch as they would be the same were cereal costs lowered and the present wage scale maintained.

Our per capita meat consumption last year was 181.55 lbs., and in the following proportions: Beef, 78.87 lbs.; pork, 88.25 lbs.; mutton and lard, 7¼ lbs.; veal, 7.18 lbs.

If computed on the retail prices and per capita with beef @ .45, pork @ .50, mutton and lard @ .43, veal @ .50, the cost would total $85.92 at Chicago today. If reduced to cost for one day, meat and lard would total .2354, or .0785 per meal per capita. The comparative costs then are .0285 for wheat and .0785 for meats per day.

A better education of our own people as to how to increase the percent of cereals and vegetables in their diet would save in a single year at home twice the value of our entire wheat crop. And it could be done without the sacrifice of palatability.

It has been calculated that the American people today spend annually eighteen billion dollars in their food bill. That of this, cereals with 38 per cent of the food value, cost only 16 per cent of the total bill.

That bread, sugar, potatoes and fruits, furnishing 62 per cent of the good value, cost 31 per cent of the total expenditure.

The remainder of the diet, namely, meat, fish, eggs, milk, cheese, butter, lard, furnishing 38 per cent of the food value costs 69 per cent of the food bill.

A change of 10 per cent in these relations would save our domestic food expenditures by three billion dollars annually.

Finland Needs Food Stuffs

FINLAND will buy practically anything, as during the war almost nothing was received from the outside world, and consequently stocks of all lines are very low, says the "Weekly Bulletin" of the Canadian Department of Trade and Commerce. There is really an unlimited market there for all kinds of imported goods. The people have practically nothing of their own production except wood pulp, paper, and dairy products. These are their only exports, and of the latter they have had nothing to export for several years.

In view of the depreciation of the currency of Finland, the markka being worth only $0.085 in July as against the par value of $0.193, imports are under Government control.

Finland is not an agricultural country, and flour has to be imported from abroad, as are most foodstuffs, and with Russia in a condition of chaos, Finland must get everything from America and England. The commodities needed now are flour, tea and coffee, leather, and woolen and cotton cloth.

Flour was formerly very cheap, and practically all of it came from Russia, but as far back as twenty years ago a well-known American firm established an agency there, and its business has been steadily growing. The year before the war this concern sold $5,000,000 worth of flour in Finland.

During the war all importation of flour ceased, and for a time the people had none; when they did get a little, the price was fabulous. Importation has started again, but it is a Government monopoly. The Government gets it from the United States and sells to bakers, etc., at cost. Bread is sold only on the card system.

The reason that grain is not grown in this country is that in former times the people found it more profitable to raise cows and make butter, etc., so that all the land was turned into pastures. As practically all the cows have been killed for meat, they have almost nothing of this kind from their land.

Meat, bacon, salt pork, etc., come from the United States. Finland has some fresh meat, but could import large quantities of preserved meat, especially pork. Lard also is imported from the United States. There is very little to be had, and the requirements are great.

The people have plenty of money (Finnish money), as during the war they manufactured so much for the Russians, but owing to the restriction against sending money out of the country, they can not purchase as much as they need and want.

Several American and British firms and many Scandinavians are selling goods and accepting Finnish currency in payment, which, of course, must be left deposited in Finnish banks. These firms are doing enormous business, and there is no limit to the business that could be done were it not for the question of "valuta" (foreign credit).

Finland occupies about 144,000 square miles of territory, of which 125,689 square miles are land, or slightly larger than Norway. This territory has a population of only 3,084,000 people. It is said that illiteracy is almost unknown.

Success

"If you will study the biographies of successful men, you will not find among them those who depended on getting a lift, to enable them to reach the goal. Trust to your own strength, energy and industry. Whatever external advantages may be yours, pin your faith to the old formula of working and waiting."

Sugar as an Energizer

FREDERICK W. MURPHY

THE complexities of the wants of man are in proportion to his activities. His life is one long, continual struggle to satisfy his cravings. These cravings manifest themselves in various ways according to environment. In one, it may be gratification of sensory desires; in another, mental gratification; but whatever wants are evidenced, they can be classed under three headings: (1) The desire for those things which are necessities for continued activity in the sphere in which the individual exists; (2) the sensory desires, or those which lend themselves to the pleasures of life; (3) those desires or wants which can be called social—love of distinction, honor or fame.

Economists have written much upon the superfluities of life, and whereas once sugar was classified as a superfluity, today the physiologist has disproved the economist and placed this commodity in the first class referred to above—a necessity for the continued activity of life. Sugar must naturally fall also in the second class, for the inherent hunger for sweetness is a desire for a sensory gratification.

It is not the purpose of this article to review the ethics of prohibition or the question of whether alcoholic beverages can be considered commodities which can be classed as an economic food. It is, however, our purpose to show both from a physiological and an economical viewpoint, the close relationship which sugar and stimulants have always held, and why this relationship will always exist.

Alcoholic beverages have always been referred to as stimulants. A stmulant is anything that "produces rapid transient increase of vital energy in the organism or some part of it." From this one can readily see the multitudinous number of commodities which can be called stimulants. We have the drugs, some of which stimulate certain organs of the body; some energize a muscle; others affect the brain; but in general it can be said that their administration must be through the digestive system.

Foods are stimulants, some to a greater degree than others. Food performs various functions, two of which arc the rebuilding of exhausted tissue and the furnishing of heat, which is a form of energy, to the body. To perform these functions the digestive system—which man as a rule treats with utmost discourtesy—must perform a certain amount of work.

Sugar is one of the most easily digested of foods. The acids of the stomach change the cane sugar to two sugars, levulose and dextrose. Voila! You have almost instant increased energy.

Sugar is a perfect stimulant and a necessary food. It satisfies a sensory desire—sweetness—one of the true tastes, of which there are but four: acid, bitter, salt, sweet. The activity and endurance of the armies have long been recognized to be increased by the plentiful ration of sugar and sweetened foods.

The prohibition mandate will make it compulsory for everyone to use some other form of stimulant than alcohol. There are five stimulating commodities which unquestionably will be chosen to take the place of alcoholic beverages. I refer to the commodities which owe their universal consumption to sugar, i. e., tea, coffee, candy and non-alcoholic drinks.

It is remarkable that sugar is closely allied to these stimulating commodities. Sugar is the basis of the product or it exerts a controlling influence on its consumption. Interdependence is very marked in the latter case. It is apparent that space will not permit a lengthy treatise on the association with and dependency of tea, coffee and cocoa upon sugar. It is sufficient to say that but for tea, coffee and cocoa, sugar in the early centuries would not have increased in consumption so rapidly, and likewise, but for sugar, the tremendous consumption of tea, coffec and cocoa would not have grown to such a remarkable volume.

In Macaulay's Historv of England is the passage: "The coffee-house must not be dismissed with a cursory mention . . . every man of the upper or middle class went daily to his coffee-house to hear the news and discuss it. Every coffee-house had one or more orators. . . . Nobody was excluded from these places who laid down his penny on the bar." There can be no doubt of the importance that sugar played in the popularity of these institutions and the responsibility which it must take upon itself for the spread all ovcr the world of the great consumption of these commodities tea, coffce, cocoa.

In comparing sugar with alcohol, it is a most remarkable thing that alcohol in alcoholic beverages must be made from somc members of the sugar family. The point has been made by some writers that in the stomach the digestivc action on sugar produces alcohol. It has already been statcd above what this digestive action really is. As soon as this chemical action is complete the levulose and dcxtrose produced are burned up. Were it true that alcohol was produced it would indicate a most unnatural and unhealthy condition which should receive medical attention at once. It has always been an open question whether the stimulating effect of the sugar in wines was not of greater diatetic value than that of the alcohol it contained. Unfermented grape juice is given to patients whcn no other food can be retained. The sugar gives the energy, and therein is the value of the juice. The same is true of oranges, and in this last epidemic of influenza oranges were at a premium because the energy due to the instant availability of the sugar in them made the demand greater than the supply.

The unfcrmented beverages are rapid energizers due to the sugar contained. If these beverages were made of water, flavoring and an artificial swcetener, thcir popularity would not have lasted, but it is the renewed vitality which one perhaps unconsciously gets which makes these products most valuablc.

Candy is another stimulant. The tons upon tons of chocolate consumed by the armies "over there" bear testimony to the efficiency of sugar as a stimulant. Statistics show that candy has always replaced alcoholic beverages in those sections which have "gonc dry," and the consumption has gone up in lcaps and bounds.

The question will be asked, Why sugar is such a great stimulant. The answer is: Sugar is one of the most easily digested foods. It produces hcat — 1,810 calories per pound. Heat is a form of energy.

The five commodities I have mentioned will be the most popular stimulants when prohibition is in force. But the basic stimulant will bc thc sugar they contain.

The Cost of Milk In the New England States

What the Bostonian buyer of milk will pay and what the eastern Connecticut farmer will receive for his milk, are questions to be settled by the pencil of the accountant. These things used to be arranged by a process of bargaining.

This fall the bargaining over the winter price had been done. The New England Milk Producers' Association and the Boston milk contractors had agreed upon a wholesale price of 10 cents a quart for milk delivered in Boston. Then the Massachusetts Commission on the Necessities of Life intervened, demanding proof that such a price was justified by the cost of production.

The Milk Producers' Association had already accumulated a large amount of data in regard to costs, but this was considered insufficient and in some cases inaccurate by the commission.

The farm management departments of the New England agricultural colleges which do most of the college work connected with farm accounting were called upon to submit data in regard to the average amount of grain fed to cows in the year from October 1, 1918, to October 1, 1919, the present cost of such grain, the average amount of milk produced by the cows and other information upon which to base a determination of the average cost of producing milk. These facts were submitted at a hearing of the Commission in Boston on October 22.

A. W. Manchester, of the farm management department of the Connecticut Agricultural College, and B. W. Ellis, county agricultural agent of Windham county, visited farmers in eastern Connecticut who keep dependable accounts and gathered statistics to be submitted at the hearing. While they declined to make a definite statement prior to their report, they agreed that the facts unearthed seem to indicate that the cost of producing milk in eastern Connecticut is even higher than previous studies had indicated. They particularly mention the amount of grain now being fed to cows as surprising. The accepted figure for the average amount of grain fed to each cow in a year in Connecticut has been around 2,100 pounds. They have found farmers feeding as high as twice this amount, and those feeding over 3,000 pounds per cow seem very common.

'Tis a strange world in which the monthly milk check of the farmer and the milk bill of the city consumer wait upon the statistics of the accountant and the decision of the Commission.

Satisfied Stomachs Contented Worker

EMPTY stomachs mean dissatisfaction, unrest, crime. To keep a man's mind healthy, his stomach must be healthy also. That is the philosophy that had been tried out and found to work by Red Cross representatives in Europe.

Money is not a substitute for food in the devastated portions of Europe. In fact, money is said to be of least value in countries where Red Cross relief is most necessary. But in most cases even food is not appreciated nor put to best use when it may be had for nothing—nothing but idleness.

And while food was the thing most needed in many of the small countries of Europe, the Red Cross discovered that the best way to get it to the people was to serve food-wages instead of dealing out gifts. The people must have the food. They want to know with certainty: "Am I going to have food this week, today—now?"

The Red Cross answers "yes"—we'll give you food in exchange for your labor. And it works. It is working now in the little villages from which the spark of life has been almost erased—those pitiful little hamlets where men are trying to put the mark of civilization again on the map.

Just giving away food didn't work. There was always the man who was in danger of becoming content with idleness and willing to await the gift of necessities from philanthropic organizations.

Moreover, if the laborer received for his hire money instead of food, he might be just as badly "up against it" as though he received nothing, for nine times out of ten he could not find the food to purchase.

But a man works well when it means that after laboring, says two or three hours, a steaming hot meal awaits him. It puts colors in the rainbow to Polish workers—this little scheme of the American Red Cross, and workers over there report that the plan is thoroughly popular.

The necessity for increasing food shipments so that Red Cross workers may continue this program is one of the reasons for the new roll call which will be held November 2nd to the 11th, when it is hoped to raise $15,000,000.

The True Destiny of the Egg

The disposition of the "ultimate consumer" to rebel against extortionate prices, and to make war on combinations which arbitrarily advance the prices of necessaries of life, finds another exemplification in the numerous boycotts engineered by housewives' clubs and other organizations against the egg dealers in Oregon. The ultimate success of the movement, which is in the nature of heroic treatment, remains to be seen; but, on the face of the returns, it will not be more efficacious than many others.

There is a feature of the egg industry which, it would appear, has not been taken into consideration and which has an important economic bearing. The consumption of the eggs of the domestic hen is an uneconomic and wasteful practice, which tends to unbalance the food supply and greatly increase the cost of living. In the last analysis, the function of an egg is to perpetuate the species. Logically true economy, broadly speaking, would demand that the hen's egg be allowed to fulfill its destiny, and that only the surplus over and above those demanded to maintain an abundant supply of poultry should be used for human food.

In this connection it would be interesting to conceive of the result—provided it was possible—if a boycott on the use of eggs as a substantial article of diet should be made practically absolute. That is to say: Suppose the real destiny of the egg of the domestic hen should be generally recognized, and the species be allowed to multiply, even to a reasonable extent, for, say, two years.

Without going into a complicated arithmetical calculation, based upon the millions upon millions of dozens of eggs now held in seclusion in cold storage awaiting still higher prices, and which would under this supposition follow the course of nature, it will be obvious that poultry would become a drug in the markets, regardless of all efforts to "corner" the supply; and the problem of defeating the alleged egg, meat and poultry trusts would have been solved.

Vinegar Decision Reaffirmed

THE term "cider vinegar" should be applied only to the product made from fermented apple juice and it is not permissible to use this name for the product made from chops and dried skins and cores by the process of soaking and subsequent fermentation, according to a recent ruling of the Bureau of Chemistry, United States Department of Agriculture, which reaffirmed the position taken previously by the department in Food Inspection Decision 140 relating to the labeling of vinegars.

This decision was made in reply to certain manufacturers who requested permission to label their product, made from dried or evaporated apple products, as cider vinegar, claiming that their product was equal to or superior to the article made from fresh apple cider. The Bureau of Chemistry does not question the wholesomeness of such a product, if made from clean, sound material, but holds that the purchaser should be informed as to the nature of the material from which it is made.

The bureau, in a letter reaffirming the position taken previously by the department stated that "it would be remiss in its duty in connection with the enforcement of the Food and Drugs Act if it should recede from the position stated in Food Inspection Decision 140. Briefly stated, the object of the act is to protect the purchaser of any article within the scope of the act by making it as certain as possible that he receives the article for which he pays. If the purchaser makes no distinction between a cider or apple vinegar as defined in Food Inspection Decision 140 and one made from evaporated apple products, there would appear to be no reason why the manufacturer should hesitate to plainly label or brand his product in such a way as to show the nature of the material from which it is produced. If the purchaser does make a distinction, whether from prejudice or other reasons, he has every right to receive an article of the kind and quality desired and paid for. I regret that our views on the subject are so much at variance, but under the circumstances the duty of the bureau appears to be clear, and if necessary the matter will have to go to the courts for a decision."

Food Inspection Decision 140 defines vinegar, cider vinegar, apple vinegar, as "the product made from the alcoholic and subsequent acetous fermentations of the expressed juice of apples," and states that the product "made from dried apple skins, cores, and chops, by the process of soaking, with subsequent alcoholic and acetous fermentations of the solutions thus obtained, is not entitled to be called vinegar without further designation, but must be plainly marked to show the material from which it is produced. The dried stock from which this product is prepared must be clean and made from sound material."

Drink Buttermilk

Pure fresh creamy buttermilk is cooling, refreshing, delicious. Especially during the hot sultry days of midsummer there is no drink excelling a glass of pure fresh ice-cold buttermilk.

As a beverage it is far superior to many other drinks served at soda fountains and similar places. Many former friends of John Barleycorn are finding a great consolation in buttermilk as an appetizer. It is both a delicious drink and an excellent food. It has been known for years that buttermilk is a healthful drink. Many physicians and dieticians are recommending buttermilk for dyspepsia and other ailments of the digestive tract.

Up till recently it has been difficult for many city dwellers to get a fresh, clean wholesome product but many a wide awake dairyman is grasping the opportunity and supplying his customers with this valuable and important food and health drink.

There is a great future for buttermilk as increased quantities are sold each year. Already progressive restaurants and soda fountains all over the United States are selling big quantities and especially since July 1, 1919, it has become very popular as a national drink.

It would be well for milk dealers and creamerymen to consider buttermilk as one of their side lines. Surplus milk from creameries and milk plants can be marketed in a most economical way by converting it into buttermilk.—R. C. Fisher, Assistant Professor of Dairy Husbandry, Connecticut Agricultural College, Storrs.

Kidding the Hen

T. R. Johnson, of the poultry department at Purdue University, issues the following bulletin in regard to the modern system of stimulating egg production by lighting the hen houses with electricity:

"Chickens have no union organization and lengthening the working hours only serves to make them more industrious and produce more eggs. This statement is borne out by the experiment in progress at Purdue University in which electric lights are used morning and evening.

"Two pens of thirty-five white leghorn hens are being fed the same ration. The chickens are as near alike as possible and have practically the same laying abilities. One lot keeps good hours rising and going to roost with the other chickens on the university farm. The other lot is being 'kidded along' with an electric light which burns from 6 o'clock in the morning until all the light the day is going to bring is at hand. The lights are turned on again about 4 o'clock and allowed to run until about 9 o'clock in the evening. This causes the chickens to rise earlier and work later.

"The experiment started November 1 and in the first thirty days the birds in the lighted pen produced 503 eggs, while the short day advocates laid only 352 eggs. Thanksgiving day the lighted pen yielded 28 eggs and the unlighted only 16.

"A pen of twenty-five barred rocks responded to the electric lights within ten days. They were started November 18, laying only five eggs that day, on November 27 they produced twenty eggs and have been going at that pace since.

"The lighting costs 6½ cents a day per pen, or $1.95 for November. The increased egg production for that time, figuring the eggs worth only five cents a piece, meant $7.55, a profit of $5.60 for the month alone."

The Swedish government has fixed the price of wheat at $2.75 per bushel, and the price of rye at $2.50 per bushel, according to a report of the American Consul General at Stockholm, dated September 24, 1919. These prices are the result of negotiations between the Swedish government and an association of mills which controls the supply, and will be effective for Swedish grain purchased by the association, for grain imported by the association, and for grain transferred by the former rationing committee of the association to the government.

Armour's

Veribest TRADE MARK CANNED MEATS

"Ready to Serve"

With Veribest Canned Meats on the pantry shelves there need be no monotony in the meals—you may have a different product every day if you wish. One pound of Veribest Canned Meats contains as much real food value as the average *two* pounds of fresh meats. This is because fresh meats shrink about 50% in cooking. Veribest Canned Meats have already undergone this cooking-shrinkage process—every ounce in the can is ready for the table.

For purity, for economy and convenience in the kitchen, for tenderness and delicious flavor, Veribest Canned Meats are unsurpassed.

ARMOUR AND COMPANY
CHICAGO

Armour's QUALITY PRODUCTS

5000

RECENT PATENTS

The following patents of interest to readers of this journal recently were issued from the United States Patent Office:

1,316,752. Sausage-linking machine. Fritz, August D., and Charles J. Will, Alton, Ill.

1,317,342. Nut sheller and separator. Dick B. Williams, New Orleans, La., assignor to Louisiana Nut & Produce Co., same place.

1,317,573. Fruit-sorting table. Fynis C. Gordon, Cashmere, Wash.

1,317,675. Lard-cracklings process and product. William B. Allbright, Chicago, Ill.

1,317,742. Apparatus for cutting and shaping lumps of dough. Frank H. Van Houten, Neacon, N. Y., assignor to Dutchess Tool Co., same place.

1,317,898. Fruit-processing machine. Artemas P. Shepard, Fresno, Cal.

1,318,109. Composition for coloring meats and meat products. George F. Ries, Chicago, Ill.

1,318,292. Process of making candy. William B. Laskey, Marblehead, Mass.

1,318,460. Rotary baking oven. Mike J. Podzeamski, Milwaukee, Wis.

1,318,931. Apparatus for drying alimentary and other substances. Abel F. Spawn, Los Angeles, Cal.

1,318,990. Fruit-grader. August Guignard and Fred Rosiger, Hood

1,314,082. Apparatus for securing alcohol from baking bread. Joseph Krizek, Gallup, N. Mex.

1,314,170. Oiler for dough-divider cylinders. Frank H. Van Houten, Beacon, N. Y., assignor to Dutchess Tool Co., same place.

1,314,245. Dough-dividing machine. Elmer A. Clark, Joliet, Ill.

1,314,300. Machine for cutting macaroni, spaghetti, and similar articles. John A. Alvey, St. Louis, Mo., assignor to Alvey Mfg. Co., same place.

1,314,864. Method and apparatus for separating fibrous and non-fibrous materials in food products. Louis C. Gehring, Circleville, Ohio.

1,314,885. Noodle-cutting machine. Louis Marko, Akron, Ohio.

1,315,056. Device for use in cutting beans. Oscar J. Tubbs, Winslow, Me.

1,315,242. Meat-curing machine. Michael F. Servatius, Chicago, Ill.

1,315,665. Candy-sanding machine. Ernest L. Hamilton, Minneapolis, Minn.

1,319,080. Machine for making spaghetti or similar products. Paul A. Hottman, Philadelphia, Pa., assignor to Freihofer Baking Co., same place.

1,319,189. Machine for cutting the tops of dough loaves. William L. Taggart, Indianapolis, Ind.

Fish

AMONG the beneficial results in the United States of the World War has been the increased interest in sea foods and the increased spread of knowledge as to purchasing and cooking these important, healthful and economic foods.

The war has aided the consumer of fish by improving and increasing both the facilities for production and distribution of fish, giving the industry an impetus it might never have had otherwise. The fishing fleet is today larger than ever before, the steam trawler fleet especially, having increased to amazing proportions. Consequently, more fish are being landed and will continue to be landed than this country has ever known before.

The distribution of this vast quantity of sea food is being taken up scientifically, and even today tons of fish caught in the Atlantic ocean are on sale at retail in the Middle-West two or three days later.

The increase in the cost of equipment, labor, taxes and transportation rates has thus far served to keep the cost to the consumer, especially those living distant from the source of supply, higher than is ideal. These conditions, however, will change as soon as similar changes are wrought in other lines.

The only cheap food of the future in America will be sea food. Get on the bandwagon now.

Much Food Value in Soft Drinks

Americans are very likely to continue to consume the over 3,000,000,000 bottles of "soft drinks" a year now consumed, aceording to the *New York Times* of May 25, and also to increase those billions, to say nothing of the uneounted billions of helpings passed out from fountains that do not keep their thirst quenchers in bottles.

How many of the millions of "soft" drinkers give a thought to the content of their bevcragcs, their food value and the effeet on their health and stamina? Well, some eontain one thing, some another, but all contain water, flavor, sweetening and earbon dioxide gas. Those four things are the basie essentials of a soft drink. There is likely to be some coloring matter and there may be an acid—usually either the eitric aeid found in lemons or tartaric aeid found in grapes, though sometimes mineral aeids are used. Frequently there is a eondiment, such as red pepper, cinnamon, allspiee, cloves, or nutmeg. There is almost certainly a traee of alcohol. And that just about covers what is likely to be found in soft drinks, aecording to specialists in the Bureau of Chemistry, Department of Agriculture.

Food value in a soft drink is ordinarily not eonsidered by the person who consumes it, his object being the delectation of the palate or the queneling of thirst, but the fact remains that good soft drinks do contain considerable food. Such produets as ginger ale, the phosphate drinks, the grape drinks, and lemon sours eontain from three-quarters to one and one-half ounees of sugar to eaeh half-pint bottle, whieh is equal to or double approximately, the sugar ration allowed to a meal under war conditions. One hundred thousand tons of sugar are used each year in the soft-drink industry.

The carbon dioxide gas that is present in all bottled soft drinks is a wholesome produet, identical with the earbon dioxide whieh oeeurs naturally in eertain mineral springs in the United States, the waters of whieh are highly prized for their effervescent properties.

Publication of U. S. Department of Agriculture Relative to Food and Nutrition

Meats: Composition and Cooking. By Chas. D. Woods. Pp. 31, figs. 4, 1904. (Farmers' Bulletin 34.)

The Use of Milk as Food. By R. D. Milner. Pp. 44. 1911. (Farmers' Bulletin 363.)

Care of Food in the Home. By Mrs. Mary Hinman Abel. Pp. 46, figs. 2. 1910. (Farmers' Bulletin 275.)

Economical Use of Meat in the Home. By C. F. Langworthy and Caroline L. Hunt. Pp. 30. 1910. (Farmers' Bulletin 391.)

Cheese and Its Economieal Uses in the Diet. By C. F. Langworthy and Caroline L. Hunt. Pp. 40. 1912. (Farmers' Bulletin 487.)

Mutton and Its Value in the Diet. By C. F. Langworthy and Caroline L. Hunt. Pp. 32, figs. 2. 1913. (Farmers' Bulletin 526.)

The Detection of Phytosterol in Mixtures of Animal and Vegetable Fats. By R. H. Kerr. Pp. 4. 1913. (Bureau of Animal Industry Circular 212.)

Experiments on Losses in Cooking Meat, 1900-1903. By H. S. Grindley, D. Sc., and Timothy Mojonnier, M. S. Pp. 95, tables 82. 1904. (Office of Experiment Stations Bulletin 141.) Price, 5 cents.

Studies on the Influence of Cooking Upon the Nutritive Value of Meats at the University of Illinois, 1903-1904. By H. S. Grindley, Se. D., and A. D. Emmett, A. M. Pp. 230, tables 136. 1905. (Office of Experiment Stations Bulletins 162.) Price, 20 eents.

Studies of the Effect of Different Methods of Cooking upon the Thoroughness and Ease of Digestion of Meats at the University of Illinois. By H. S. Grindley, D. Sc., Timothy Mojonnier, M. S., and Horace C. Porter, Ph. D. Pp. 100, tables 38. 1907. (Offiee of Experiment Stations Bulletin 193.) Price, 15 eents.

Food Customs and Diet in Amerieian homes. By C. F. Langworthy, Ph. D. Pp. 32. 1911. (Office of Experiment Stations Circular 110.) Price, 5 cents.

Digestibility of Some Animal Fats. By C. F. Langworthy and A. D. Holmes. Pp. 23. 1915. (Department Bulletin 310.) Price, 5 cents.

Digestibility of Very Young Veal. By C. F. Langworthy and A. D. Holmes. Pp. 577-588. 1916. (Journal of Agricultural Researeh, 6 (1916), No. 16.) Price, 5 cents.

Digestibility of Hard Palates of Cattle. By C. F. Langworthy and A. D. Holmes. Pp. 641-648. 1916. (Journal of Agricultural Research, 6 (1916), No. 17.) Price, 5 cents.

Fats and Their Economical Use in the Home. By A. D. Holmes and H. L. Lang. Pp. 27. 1916. (Department Bullctin 469.) Priee, 5 cents.

Studies on the Digestibility of the Grain Sorghums. By C. F. Langworthy and A. D. Holmes. Pp. 31. 1916. (Department Bulletin 470.) Priee, 5 cents.

Lessons on Dairying for Rural Schools. By Alvin Dille. Assistant in Agrieultural Edueation. Pp. 31, figs. 14. Contribution from the States Relations Serviee. (Professional Paper.) June 6, 1919. (Department Bulletin 763.) Price, 10 eents.

For use of teachers.

Commereial Preservation of Eggs by Cold Storage. By M. K. Jenkins, Assistant Baeteriologist. Pp. 66, pls. 6, figs. 8. Contribution from the Bureau of Chemistry. June 3, 1919. (Department Bulletin 775.) Priee, 10 eents. Of speeial interest to wholesale dealers in eggs and managers of cold-storage plants.

A study of the Alkali-Forming Baeteria Found in Milk. By S. Henry Ayers, Philip Rupp, and Wm. T. Johnson, Jr., of the Dairy Division. Pp. 39, figs 2. Contribution from the Bureau of Animal Industry. (Professional Paper.) June 17, 1919. (Department Bulletin 782.) Price, 5 cents. Of interest to chemists generally.

MISCELLANEOUS

Standards of Purity for Food Produets. Pp. 22. June, 1919. (Cireular 136, Officc of the Secretary.) Priee, 5 eents. Supersedes Offiee of the Secretary Circulars 13, 17, and 19.

Trend of the Dairy-Cattle Industry in the United States and Other Countries. By T. R. Pirtle, Dairy Division. Pp. 19, figs. 21. Contribution from the Bureau of Animal Industry. June, 1919. (Department Cireular 7.)

Points for Egg Buyers. What to Sell: What to Buy: How to Candle: Egg-Candling Devices. Pp. 11, il. Contribution from the Bureau of Chemistry. 1919. (Department Circular 25.)

HEBE

—The new food—A gift from nature and science—For cooking and baking.

Nutritious, Economical, Sanitarily Produced Correctly Labeled, Properly Advertised

HEBE is pure skimmed milk evaporated to double strength enriched with cocoanut fat.

HEBE is an important food discovery—doubly important at this time when the world's food supply is a matter of concern to every state and federal food official. HEBE is a distinct addition to the world's food supply. It reclaims for human use skimmed milk, now so largely diverted to stock-feeding. It brings this skimmed milk to the market in a form which makes it desirable for cooking purposes. This releases, for direct feeding purposes, a large volume of the whole milk now used in cooking purposes, and increases the use of dairy products in the home.

HEBE is all that a good food product should be—wholesome, pure and nutritious. It is rich in the important dietary elements—protein, carbohydrates and fat. It takes 210 pounds of pure skimmed milk and 7.8 pounds of refined cocoanut fat to make 100 pounds of HEBE. In the reduction the water only is removed.

HEBE is produced under the most sanitary conditions. In the hermetically sealed can it retains the purity and wholesomeness guarded so carefully in the process of manufacture.

HEBE is honestly and frankly labeled, advertised and sold for just what it is—"A Compound of Evaporated Skimmed Milk and Cocoanut Fat." It is recommended for cooking, baking and coffee. Hence it goes into the home as an auxiliary to the family milk supply for specific purposes.

Thus HEBE, because of its purity, wholesomeness and economy, and the honesty with which it is produced and marketed, is a product of which food officials, dietitians and economists—in fact everyone who is interested in the health and welfare of the nation—can all approve.

We have published a booklet giving the complete story of the dietetic and economic value of HEBE. It will be sent upon request without charge. Address: 2109 Consumers Bldg., Chicago.

THE HEBE COMPANY

Chicago **Seattle**

Chlorination of Water Supplies

IN the United States there are over 2,500 water supplies now being chlorinated—over 3,000,000,000 gallons of water each day—and 3,000,000,000 is approximately the amount of water that flows over Niagara Falls in three-quarters of an hour. * * *

The U. S. Census Bureau tells us that in 1906 the typhoid fever death rate was 32.1 per 100,000, and the estimated number of deaths from typhoid fever within the year was approximately 35,000. In 1906 there were no chlorinated water supplies. In 1916, with over a thousand chlorinated water supplies in the United States, the typhoid death rate had dropped to 13.3 per 100,000, and the estimated number of deaths for 1916 was approximately 13,000, or a saving of 22,000 lives in one year by the elimination of typhoid fever. * * *

A city cannot have too pure a supply. Proper filtration will make the water clear and sparkling. There are many water supplies that are now chlorinated that should also be filtered. Chlorination does not in any way change the physical or chemical characteristics of the water. Chlorination will not remove turbidity or color, will not remove suspended matter or rectify the water from the standpoint of appearance, but it will sterilize any water and make it absolutely safe to drink.

Water filtration plants have proved their worth so frequently and completely as not to need further exposition here. They fill a place in water treatment that is vital; but just as chlorination is not a substitute for filtration, so filtration is not a substitute for chlorination. Filtered water should be chlorinated to destroy the bacterial life that has passed through the filters and may cause disease.

Chlorination of water is a municipal insurance, the cost of the premium being approximately fifty cents per million gallons of water treated.—*The American City.*

Adulterated Butter

Sent Out by the North Dakota Agricultural Experimental Station.

DURING the prevailing high prices for butter there seems to have been a tendency, in some places, to take advantage of and not be satisfied with the large profits made, but butter was manufactured and sold which was both short weight and adulterated by the addition of excessive amounts of water. By this time manufacturers know, or ought to know, that when butter contains 16 per cent or more of water it is liable to a tax under the Internal Revenue Laws of the United States. Failure to comply with the regulations to take out a United States Internal Revenue license and to pay the tax renders the manufacturer or dealer in butter liable to a heavy penalty.

Good butter should not contain to exceed thirteen (13) per cent of water, and yet there has been a tendency during the past few years to get a large over-run in the manufacture of butter by the addition of water, and the consuming public is the sufferer. This practice must be broken up, and a warning is hereby issued, which will not be repeated, to all creameries, manufacturers and handlers of butter that failure to comply with the requirements which provide that each and every package of butter put out by creameries shall show the name and address of the manufacturer and the true net weight of the product. If the butter is adulterated with water the manufacturer is also liable to a heavy penalty.

New Orleans as an Export Point

During three months period ending September 30, a total of 1,336 hogs and 31 cattle were shipped from New Orleans to Havana, Cuba. The hogs were destined for slaughter, while the cattle consisted of well-bred dairy animals, mostly Holsteins. Prospects indicate, reports the United States Department of Agriculture, that future trade through the port of New Orleans will include shipments to Mediterranean and South American points. In this connection it is worthy of mention that the livestock exports from New York during the same period consisted of 1,252 cattle to Antwerp, Belgium; 60 horses to London, Eng.; 61 horses to Havre, France; 40 cows and 157 horses to Bermuda; 6 horses and 2 mules to Trinidad; 40 mules to British West Indies.

To Take Action on the Corn Borer

COMMISSIONER of Agriculture Charles S. Wilson announced today that a communication would be sent to the 1920 Legislature, asking that an appropriation be made to cover losses by farmers resulting from the depredations of the European corn borer. A strict enforcement of the quarantine order, which prohibits the removal of corn from the quarantined district for selling or for any other purpose, has worked a hardship on farmers who planted large areas of corn, and Commissioner Wilson is of the opinion that it is only fair that they be recompensed for their losses and it is not anticipated that there will be any strong opposition to this.

Commissioner Wilson stated that the co-operation of farmers in the infested district, in the effort to stamp out the corn borer which, if unchecked, might destroy half of the corn crop of New York State, valued at thirty million dollars, and which might spread into the middle western states, where the corn crop is valued at hundreds of millions of dollars, is absolutely essential. He said the Division of Agriculture was seeking the best method of controlling this pest, which came to this country from Europe. At this conference, he stated, the policy will be decided upon, which will be followed in this, as well as in other states in which there are districts infested by the European corn borer.

The Division of Agriculture is having a bulletin prepared which will show the life history of the borer and methods of control. Work on this bulletin is being rushed and it will probably be ready for distribution within a few weeks.

Commissioner Wilson announced that the corn borer has worked its way from Massachusetts into New Hampshire, so that now there are infested areas in New York, Massachusetts and New Hampshire. The infested area in Massachusetts was enlarged from year to year in spite of the efforts to check and control the borer. In New York State, there are infested areas in Schenectady, Montgomery, Schoharie, Albany, Saratoga, and in Dutchess counties. Every effort is being made to prevent the insect from spreading to other counties. In some European countries, the corn crop has been only one-third or one-half of the normal for years as a result of attack by the corn borer.

Few Gifts of Nature Have Proved More Useful to Mankind Than Corn— King of American Cereals

---

CORN STARCH—edible, laundry, or lump, has grown to be a household necessity.

CORN OIL—most wholesome as a salad oil, emphasizing the flavor of the salad. For shortening, frying, and the myriad of uses in the kitchen. **Corn Oil** has made a distinct place in the home.

CORN SUGAR—has its place with the ice-cream manufacturer, the physician and the baker.

CORN SYRUP—a wholesome, popular priced sweet, gives the home a pure, nutritious food.

American Manufacturers' Association of Products from Corn

208 South La Salle Street **CHICAGO, ILLINOIS**

MEMBERS:

American Maize Products Co., 135 William St., New York
Clinton Sugar Refining Co., Clinton, Iowa
Corn Products Refining Co., 17 Battery Place, New York
Douglas Co., Cedar Rapids, Iowa
J. C. Hubinger Bros. Co., Keokuk, Iowa
Huron Milling Company, Harbor Beach, Mich.
Keever Starch Company, Columbus, Ohio
Piel Bros. Starch Co., Indianapolis, Ind.
A. E. Staley Mfg. Company, Decatur, Ill.
Union Starch & Refining Co., Edinburg, Ind.

Results of Research Reported

(Continued from page 9)

Quite a different form of food conservation carried on by the Burcau was thc work to prevent dust explosions in grain elcvators and mills. In the past large quantities of grain and flour have been destroyed, and many lives lost from disastrous dust explosions. Methods for preventing such explosions have been workcd out. Five thousand six hundred plants were visited for the purpose of having the safety methods adopted. As a result of this work there has bcen a marked reduction in the number of fires and explosions.

Finding Uses for Waste Products

Corn cobs, one of the largest waste by-products of farming, may now be utilized as the result of processes which have becn worked out and patented for thc preparation from corn cobs of adhesive gum and of the rare sugar xylose. Processes for converting xylose into substances which may be useful commercially have been patented and published.

Cull oranges and lemons not suitable because of size, shape or defects for shipment as fresh fruit are used for the manufacture of many useful foods and chemicals. A citrus by-products laboratory opcrated by the Burcau of Chemistry at Los Angeles, Calif., has workcd out new methods for the manufacture of marmalade, vinegar, candied peel, juice, citrate of lime, citric acid and othcr products. As the rcsult of this work a profitable citrus by-products industry has been established on the Pacific Coast. Work is now under way in Florida.

Work to improve existing mcthods for the manufacture of starch from cull and surplus potatoes is under way. Methods for the manufacture on a small scale of sirup from cull sweet potatoes have been published. The curtailment of distilling and brewing, together with the war-time restrictions placed upon the consumption of sugar, seems to have stimulatcd the production of barley sugar or maltose, as well as that of maltose sirup. Since the extension of the uses of such material is a matter of some interest to the producer of barley, practical studies on the uses of maltose sirup in candy manufacture have been undertaken. Preliminary results indicate that perhaps large quantities of maltose sirup can be employed in this way.

The report of the chemist also mentions many scientific investigations relating to drugs, food nutrition and methods of analysis. The results of research, in so far as completed, have been published in various technical journals.

A New One

"Father, what's an inheritance tax?" asked Bobby.

"It's when your mother blames all your faults on me, son."

CANNED SALMON

ALL GRADES
ALL SIZES

Largest Distributors in the World

KELLEY-CLARKE CO.
New York City Seattle, Wash.

How did the ancient Egyptians raise their dough?

Four thousand years ago the Egyptians leavened their bread with sour dough left from the last baking—dough full of all manner of yeasts and bacteria from the air.

This has been proved by microscopic examination of barley bread found in the tombs of ancient Egypt. Not the least interesting part of this is that the same primitive method has persisted for literally thousands of years—and is even today in use in sections of Europe and the countries of the southern hemisphere.

Since that time there have been many new methods of leavening but the latest chapter is baking powder, and the final development in baking powder is Ryzon. It is made of pure, healthful, economical ingredients, combined with scientific accuracy.

Ryzon is packed in full 16 ounce pounds—also 25c and 15c packages. The new Ryzon Baking Book (original price $1.00), containing 250 practical recipes, will be mailed, postpaid upon receipt of 30c in stamps or coin, except in Canada.

The Ryzon level measure

GENERAL CHEMICAL CO.
FOOD DEPARTMENT
NEW YORK

Some "Olive Oil" Frauds; Read Labels With Care

Several seizures have been made and a number of prosecutions instituted as a result of a campaign inaugurated by the officials charged with the enforcement of the Federal Food and Drugs Act against the interstate shipment of adulterated and misbranded olive oil.

Consumers are advised to read carefully the labels of all containers offered to them as containing olive oil to determine whether the manufacturer actually claims that the product is olive oil or merely suggests it by misleading devices. Some of these deceptively labeled products are sold by itinerant peddlers.

Cottonseed oil, corn oil, peanut oil, soy-bean oil, and other vegetable oils are wholesome, palatable oils, but they should be bought under their own names at prices much lower than the prices at which olive oil is usually sold.

Owing to the scarcity and high price of olive oil a number of dealers were putting on the market cottonseed, corn, and other vegetable oils labeled as olive oil. As the result of a large number of seizures of these products and prosecutions pending against the responsible parties, the practice has been generally discontinued. Some dealers, however, are endeavoring to continue to reap the large profits involved and hope to escape the penalties of the Food and Drugs Act by so wording the labels of their product as to convey the impression to the consumer that the product is olive oil without stating directly on the label that it is olive oil.

These products are commonly labeled as "salad oil" or "table oil," or some other indefinite kind of oil. On the labels are displayed conspicuous pictures of olive trees or maps of Italy or other devices intended to suggest olive oil. In some instances, the words "cottonseed oil" or "corn oil" are printed in very small type in an inconspicuous place on the label. A cursory reading of the label such as is usually given by retail purchasers, would lead the average person to believe that the product was olive oil. Only the most careful scrutiny and exact reading will reveal that the product is not labeled olive oil, in fact, is not olive oil.

The practice of deceptive labeling, even though no directly false statements are made, is, in the opinion of the officials, a violation of the Food and Drugs Act. Seizures are being made and prosecutions instituted to check also this form of deception and misbranding.—*Michigan Food & Drug Monthly.*

Fresh Water Mussel Cultivation

The director of the fisheries biological station at Fairport, Iowa, in September reported interesting results from experiments in rearing mussels from artificial infection in troughs. A heavy plant of the valuable yellow sand shell (Lampsilis anodontoides) was obtained and a considerable number of juveniles were also secured from infection with the common river mucket (Lampsilis ligamentina). The usual good results were secured with the Lake Pepin mucket (Lampsilis lutcola).

How Food Fish Are Wasted

The waste of food fish is very great along the Labrador coast, according to Dr. Robert T. Morris of New York City, who writes in *The Auk:* "Small cod and hake which are not desired by the fishermen are often smothered in traps or killed when the traps are emptied, and I have seen them floating for miles on the surface when the trappers were at work. The cod trappers catch a great many adult salmon by setting their nets in the channels when the salmon first make their way toward the rivers. This is illegal but is winked at by the officials. A remarkable waste of salmon occurs in September when the herring nets are used near the coast. This is the time of year when the smelts are descending from the rivers and putting out to sea. They are captured in quantities in the herring nets."

"Never leave till tomorrow that which you can do today."—

The time to try "Purity" is now.

We can only tell you about its superior flavor and quality.

But until you try "Purity" for yourself you will never really know how good it is.

Save the dimes and quarters! True economy will help reduce the High Cost of Living. This is your opportunity.

THE CAPITAL CITY PRODUCTS CO., Columbus, Ohio
Also Makers of Nut Margarine
The Pure Spread for daily Bread

E. PRITCHARD

Packer and Manufacturer of the Finest

"EDDYS"

BRAND

Canned Foods, Jellies, Preserves,
Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

SAUER'S

PURE FLAVORING EXTRACTS

If you want the finest flavors—use SAUER'S

Because—

SAUER uses only the purest ingredients.
SAUER exercises the utmost care throughout the process of manufacture.
SAUER properly ages both raw materials and finished product before putting on the market.
SAUER'S is one of the most completely equipped, modern and sunny plants of any food product manufacturer in the United States.

32 FLAVORS and SAUER'S OLD VIRGINIA FRUITTI-PUNCH

THE NEW TEMPERANCE BEVERAGE AND ALL-ROUND FLAVOR. A REFRESHING DRINK WHEN PROPERLY MIXED WITH SUGAR AND WATER. DELIGHTFUL IN FRUIT PUNCH, MILK AND EGG COMBINATIONS, SHERBETS, ICES, ICE CREAM, PUDDINGS, CAKES—IN FACT IN ANY DESSERT. IT IS THE *ONE* FLAVOR THAT CAN BE USED FOR ALL PURPOSES. A 35¢ BOTTLE MAKES 40 GLASSES OF DELICIOUS PUNCH.

QUALITY HAS MADE *SAUER'S* THE LARGEST SELLING BRAND IN THE U.S.
QUALITY HAS WON FOR *SAUER'S* SEVENTEEN HIGHEST AWARDS FOR *PURITY, STRENGTH AND FINE FLAVOR*

(OFFERED IN 12 DIFFERENT SIZES TO MEET THE NEEDS OF EVERYONE. FOR SALE BY ALL GOOD GROCERS)

THE C.F. SAUER COMPANY, RICHMOND, VA.
ESTABLISHED 1887

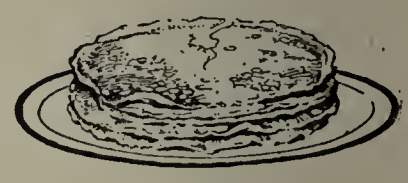
National Advertised Articles Most Profitable for Jobber to Handle

(Continued from page 19)

articles has the assurance that he is getting goods to the consumer at prices lower than goods of similar quality could be produced in any other way. He thereby adds to his own good will and prestige. He establishes a fund of permanent investment value.

The relation of the jobber to the specialty man is a most important subject in these days. Far too big to be disposed of off-hand in a paper like this. Yet one cannot refrain from emphasizing here the profitableness to the jobber of the specialty order of advertised articles.

All the jobbers' advantages resulting from the handling of nationally advertised goods are brought to their maximum by his close co-operation with the manufacturer who has specialty salesmen calling on the retail trade. You can tell the successful jobber by the warm welcome he gives the specialty salesman. He knows the specialty salesman is bringing him bona fide orders costing the jobber little or nothing to obtain. The alert jobber recognizes that his profit is guaranteed by his very acceptance of good faith of the business handed him. He is eager to fill the orders. He knows that when the product is right, repeat business of equal profit is bound to follow. Some day some jobbers will wake up to a realization of the acres of diamonds at their very door steps. They, too, will then see the wisdom of a policy of close co-operation with the members of our American Specialty Manufacturers' Association as do those who now join hands with us.



Pancakes that are perfect every time—light, tender, digestible! That is what you are sure of when you use Aunt Jemima Pancake Flour.

Everything to make good pancakes comes ready mixed in this famous flour—specially ground cereals, leavening, even sweet powdered milk. There is no chance of failure. And the flavor of Aunt Jemima Pancakes has made them the most popular breakfast in America.

Aunt Jemima Buckwheat Flour, too, is well worth knowing. It is ready mixed, like the pancake flour—and gives you the good old-fashioned buckwheat flavor with none of the old-time inconvenience.

"I'se in town, Honey!"

Copyright 1920, Aunt Jemima Mills Company, St. Joseph, Missouri

NOTICES of judgment covering 100 actions under the Federal Food and Drugs Act have been issued recently in the service and regulatory announcements of the Bureau of Chemistry, United States Department of Agriculture. These actions were based upon charges by the Government of adulteration or misbranding or both of foods, drugs, medicines, and stock feeds. The fines imposed by the courts ranged from $10 and costs to $500 and costs. In some instances, adulterated foods which had been seized by the Government because they were filthy and decomposed were ordered destroyed by the courts. In other instances, where only part of the seized shipment was spoiled, the courts ordered the sale of the good portions and the destruction of the adulterated food.

The products upon which the larger number of actions were based were spoiled eggs, decomposed tomato products, milk which was contaminated or watered, spoiled powdered milk, adulterated condensed milk, stock feeds, including cottonseed meal containing less protein than was claimed on the label, and drugs below the required standard.

Other cases were based upon adulterated or misbranded pork and beans, brandy, camphor, candy, salmon, sardines, gelatin, oats, sassafras oil, peaches, apples, cider, lemons, olive oil, oil of birch, peas, prune butter, vinegar, and mineral water.

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

Rumford

THE WHOLESOME

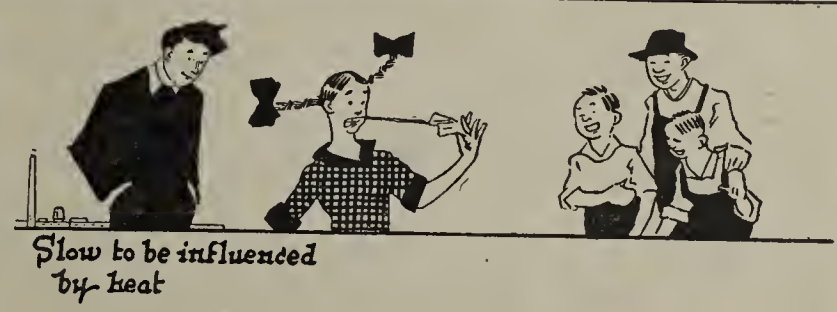
BAKING POWDER

insures whiter, sweeter and lighter cake and bread—it raises the baking just right, and adds to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

RUMFORD CHEMICAL WORKS,
Providence, R. I.

L.71 10.17



On his little journey through the mill, Bert picked up a hunk of the stuff we use to wax our paper and, of course, we told him it came from India, because we wanted a wax that was slow to be influenced by heat—that would keep molasses kisses and lolly-pops and fine candies in elegant shape even when the sun boils *hot*.

The de lux book Cy has finished for us is full of pointed things, observed by E. H. the Second who wrote most of it for us. Right gladly will we mail you a copy—if you speak up in a letter.

Kalamazoo Vegetable Parchment Company

Kalamazoo, Michigan

"World's Model Paper Mill"

Makers of Waxed Paper and Vegetable Parchment

KvP

Moistening Fingers Forbidden

As the result of a complaint received from a citizen that he had personally noted grocery clerks and market men to moisten their fingers in their mouths while wrapping foodstuffs, the Department's Bureau of Food and Drugs made investigations which have resulted in the presentation of the following regulation for adoption by the Board of Health:

Resolved: That the Regulations Governing the Handling, Storing, Offering for Sale and Selling of Food and Drink in Retail Stores be amended by adding thereto a new regulation known as regulation 28, to read as follows:

Regulation 28. Wrapping of Food Regulated and Restricted. No person for any purpose shall, at any time, moisten with saliva, directly or indirectly, by spitting or by the use of fingers or utensils or accessories of any kind, any food or any wrapper in which food is placed or any label affixed to any such food or such wrapper.

—*Weekly Bulletin of the Department of Health, New York City.*

"Solving Your Foreign Problems"

I can be of real value to a live and aggressive (but sound and well organized) concern which is competing for the world's trade and is looking for an export man with demonstrated executive ability, capable of organizing and successfully managing a foreign department based on 9 years of resident foreign experience embracing many of the leading European, Australian, African and Far Eastern countries; in addition possessing intimate and thorough knowledge of the languages, customs and needs of these markets. Highest references assured. Address The American Food Journal, 140 N. Dearborn St., Chicago, Ill.

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY
Chicago *In Business 66 years* U. S. A.

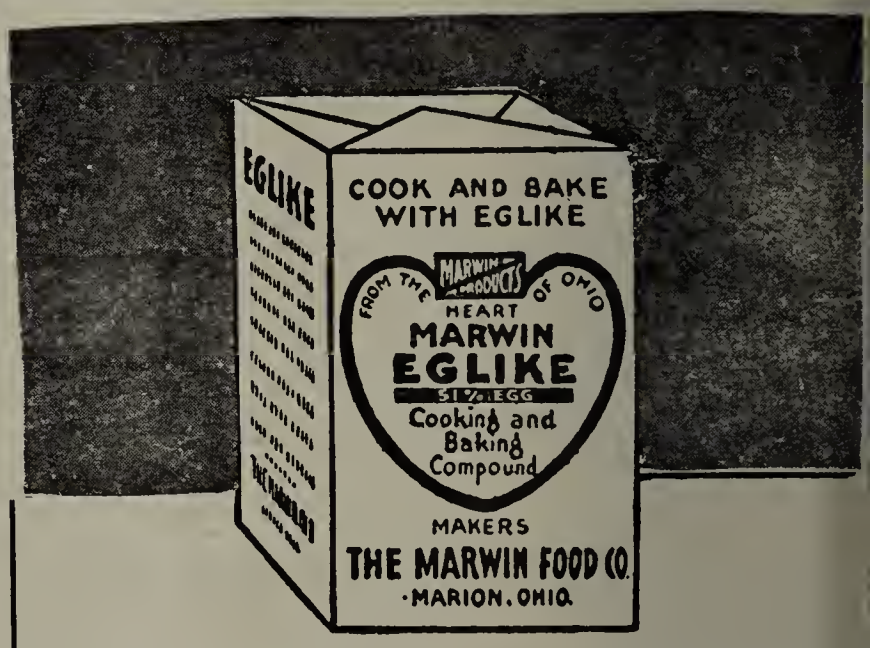
Ammonium Phosphate

Phosphoric Acid

Baking Powder Materials

Highest Quality
For Food Purposes

Victor Chemical Works
New York CHICAGO St. Louis



SALAD DRESSING MEAT LOAF
MUFFINS GRAVIES
PANCAKES PUDDINGS

Every Day Cooking and Baking
will be relished with enthusiasm if made with

EGLIKE
51% EGG

It Is Economical.

Requires no eggs.
Grocers profit always certain. No loss or damage.
Your jobber will sell you.

THE MARWIN FOOD CO., Marion, Ohio

Selling Army Surplus

(Continued from page 22)

The allotment of goods to the army retail stores from the general supply depots was based on the population of the several districts.

For the week ending October 25, sales in the twenty-five stores amounted to $1,754,123.83, and from the date of the opening of the chain on September 25 total sales had amounted to $4,823,502.50. Of course, the War Department is seeking no profit on these sales, and that accounts in large measure for the low prices. Another factor is the low cost of operation, due to careful management. The cost of operation so far has ranged from 1⅔ per cent on the list price of some articles to 12 per cent on others.

The army retail stores were opened just when the government was trying to reduce the cost of living, so the project was a popular one. On the opening day at the Chicago store 50,000 people were waiting in the streets in the neighborhood for the chance to buy. At some of the stores the openings were celebrated. At San Antonio, for instance, the commander of the Southern Department of the Army, the mayor of San Antonio and other public officials conducted special exercises, and the army post band was in attendance.

The first day's business at the New York store brought in 12,000 customers, whose purchases aggregated $21,000 over the counter and $1,900 by mail.

The average purchase at most of the stores totals $3, and, in view of the fact that so many of the articles offered are priced at but a few cents, the War Department is well satisfied with this distribution.

Cities in which the army retail stores have been established are the following: Atlanta, Boston, Baltimore, Charleston, Chicago, Columbus, Denver, Detroit, El Paso; Jeffersonville, Indiana; Los Angeles, New Orleans; Newport News, Virginia; New York, Omaha, Philadelphia, Pittsburgh; Portland, Oregon; San Antonio, San Francisco, Seattle, St. Louis, St. Paul and Washington, D. C.

The original plan provides for operating the stores ninety days, which will keep them open until Christmas. If the goods are not all sold by that time it is likely that the management will close the less successful stores and operate the others until they no longer pay.

This article is published by the courtesy of Business.

How Prohibition Has Helped Soft Drinks

WHAT prohibition has done for the soft drink companies is reflected in official figures of the Coca-Cola Co., says the *Wall Street Journal,* giving September shipments as 1,972,399 gallons, compared with 824,813 gallons in the corresponding month last year.

For the nine months ended Sept. 30, 1919, shipments were nearly 15,000,000 gallons, and for the full year are expected to exceed 20,000,000 gallons, compared with 10,314,727 gallons in 1918, 7,521,833 gallons in 1915, and 4,190,149 gallons in 1910.

Shipments of 20,000,000 gallons of syrup in 1919 indicates a consumption of about 2,500,000,000 bottles or glasses, the company estimating 125 bottles to each gallon of syrup.

THERE IS

CLEANLINESS, HEALTH
INSURANCE, ECONOMY
AND CONVENIENCE IN

Our **PET**
BRAND
Evaporated Milk

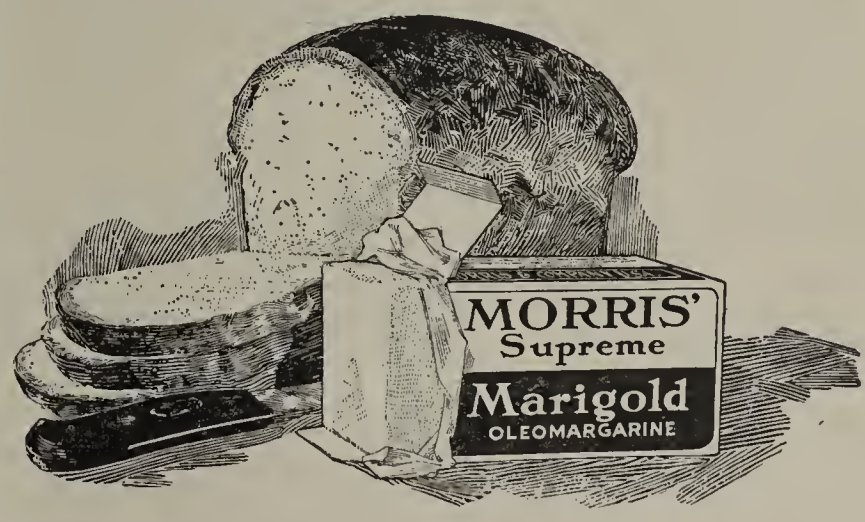
The Standard of the World

Wins and Holds Trade on account of its Superior Quality

PREPARED BY
Helvetia Milk Condensing Co.
HIGHLAND, ILLINOIS
ORIGINATORS OF EVAPORATED MILK

MORRIS

Supreme
Marigold



Wholesome and delicious for eating and cooking. Two kinds: Supreme Marigold and Supreme Nut Marigold; both packed under the yellow and black label.

MORRIS & COMPANY
CHICAGO

Investigate Prevention Food Spoilage

WITH the cost of living as high as it is, permitting good food to spoil in transit and in the hands of dealers is more noticeably wasteful than ever before. Yet a great deal of food is constantly lost in that way. In order to prevent as much of it as possible, the United States Department of Agriculture has made extensive laboratory studies of the bacteria that produce spoilage, have developed methods of control through sanitation, sterilization, dehydration, and refrigeration and is putting them in operation on a commercial scale. The work already done includes methods of candling, cooling, packing, and shipping eggs; the precooling of plants, together with model refrigerator cars, and methods of killing, dressing packing and shipping, to permit small shippers of dressed chickens and turkeys to secure the minimum of spoilage; methods of preventing spoilage in commercially canned tomatoes, catsup, tomato pulp, and similar articles; improved methods of handling, packing, and shipping shrimp and sardines and best methods of shipping fresh fish to inland cities. Investigations are under way for improvement of methods in canning salmon. Experiments are being conducted, also, with a view to developing methods of drying fruits and vegetables that will preserve the delicate flavor of the original products and to establish a permanent drying industry in the United States.

The Panacea

We need less agitation, less legislation, less oratory and more confidence in business in this country.

We need more production and fewer pronouncements.

If every man who works had in his heart the true principles of Americanism there would be a quick end to our industrial discord.

Serve and be grateful for the privilege is in the discard; strike and damn the consequences—that is the injurious spirit that is sweeping the country.

Spread Americanism, preach charity and concord, loyalty and service and down discord by increased production.

Mrs. Gnaggs—Before we were married you used to say you could listen to my sweet voice all night.

Mr. Gnaggs—Well, at that time I had no idea I'd ever have to do it.

Every Kind of
WARD'S
FAR FAMED
BREAD and CAKES
is the finished and perfected result of skill, science, experience, and the use of highest grade materials.

WARD BAKING COMPANY
New York Boston Providence Cleveland
Brooklyn Pittsburgh Chicago Baltimore

TIN and FIBRE
CONTAINERS
for
Foods—Drugs—Oils
Infinite Variety
Large Capacities
Prompt Deliveries
American Can Company
Chicago New York San Francisco
With Offices In All Large Cities

Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

Dixie Margarine is pasteurized into purity in every ingredient.

Churned by Wm. J. Moxley Inc. Chicago

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Stanl. FEB 23 1920

THE AMERICAN FOOD JOURNAL

E. T. MEREDITH, Secretary of Agriculture

FEBRUARY, 1920

"The glow of good health comes from within"

FLEISCHMANN'S YEAST

taken regularly, three times a day, gives you more nourishment from your food, greater strength—ambition.

It will eliminate the disorders which cause pimples, blackheads, boils, carbuncles, and acts as a mild cleansing laxative.

Eat—Fleischmann's Yeast

three times a day and be healthy.

On sale at all grocers.

THE FLEISCHMANN COMPANY

"THE ATLAS LABEL PROTECTS YOU"

Research and Testing Laboratory No. 3—New York

The "Atlas" Label on every original package of flavor and edible color means that H. Kohnstamm & Company guarantees the contents to be suitable for food products and to strictly comply with the National Pure Food laws.

"First Producers of Certified Colors"

H. KOHNSTAMM & CO.

Established 1851

83-93 Park Place, New York **11-13 East Illinois Street, Chicago**

The Wonderful Story of the Tin Can

IF the tin can has been to you a common thing of commonplace service, think that way of it no longer. Think of the tin can for what it *really* is—a wonder of the times. Think of it as a monument to patient achievement in our personal interests.

Once the tin can lay inert in the Earth in its original elements, awaiting the hand of man that should bring it forth.

What a tribute could be written to what Earth holds in trust for her people! How she holds in one hand the secret of fruit and vegetable! How she holds in the other the no less wonderful secret of the means that shall carry her bounty to any table—anywhere—any time of the year.

Production of more than Six Billion cans annually for the canned food output of America is significant of the development of the tin can industry, and of the canned food industry, as well, which makes all these millions upon millions of cans necessary. The imagination is staggered by it. Expressed in terms of tables supplied, and of individuals served, it is almost beyond belief.

The "tin" can is a steel can, coated with tin. It is a product of science, of scientific research by hundreds of specialists who have studied every step of evolution beginning with analysis of the steel itself.

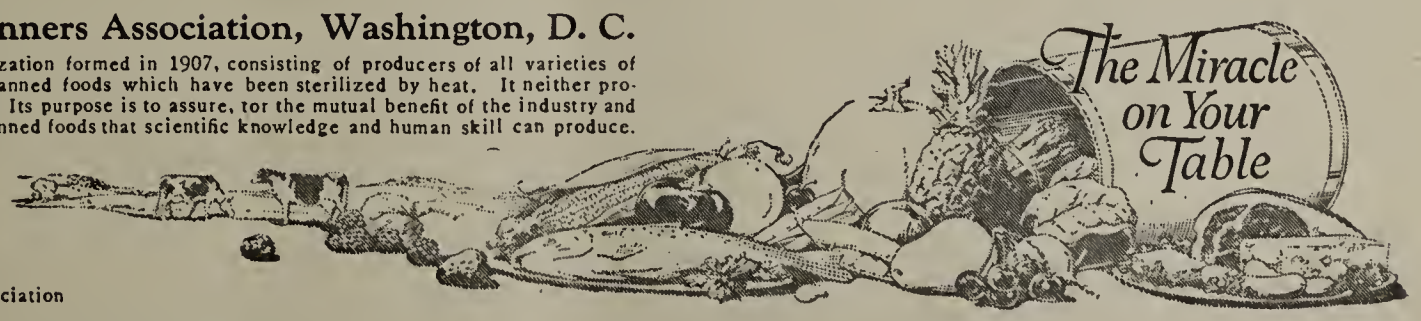
For example, over a period of years, picked men from the laboratories of four great organizations united in the common effort of developing the tin container. These were the laboratories of steel manufacturers, tin plate manufacturers, can manufacturers, and the National Canners Association.

Special "heats" of steel were experimented with, foods packed in the cans produced from the steel, and the results recorded with scientific accuracy. The thickness of the tin coating became a matter of scientific determination. Methods of sealing and imperviousness of joints are subjects of closest scientific scrutiny.

The tin can unquestionably is the safest, most practicable and scientific food container that human skill and ingenuity have been able to devise.

National Canners Association, Washington, D. C.

A nation-wide organization formed in 1907, consisting of producers of all varieties of hermetically sealed canned foods which have been sterilized by heat. It neither produces, buys, nor sells. Its purpose is to assure, for the mutual benefit of the industry and the public, the best canned foods that scientific knowledge and human skill can produce.



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Maximum Nourishment at Minimum Cost

To be healthy and vigorous every person needs food which really nourishes the body and supplies it with energy. One of the best foods for this purpose is

Swift's Premium Oleomargarine

You will benefit from its economy as well as from its wholesome qualities, for you make a worth-while saving on every pound you buy.

Rich and extremely delicate in flavor, this oleomargarine gives new deliciousness to every food—it makes cakes richer, vegetables tastier, cream sauces smoother and more savory. Spread on a slice of fresh bread, it is supremely good!

Ideal conditions of perfect cleanliness surround the making of this fine food. It is never touched by hands. Modern machinery mixes the pure materials together. This food of highest quality is at your grocer's—get a package today.

Swift's Premium Oleomargarine is the most widely distributed brand of oleomargarine.

Swift & Company, U. S. A.

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The Sign of a Better Method

EMCO IDEALS

Not Merely to Make Goods for Sale

But to co-operate with all those progressive forces which help retailing up to a plane of perfect public service.

To that end the EMCO Wooden Dish for the delivery of retail quantities of bulk foods is packed in units handy for the retailer to use.

For that reason EMCO Clothespins are carefully selected and put into dirt proof cartons.

With that in mind EMCO Toothpicks are packed in sanitary, hermetically sealed cartons.

The quality and quantity in each EMCO package is absolutely guaranteed.

When you see the EMCO trademark you are in a high-class store.

ESCANABA MANUFACTURING COMPANY

MANUFACTURERS

Escanaba, Michigan

WOULDN'T you like to handle a margarine ***so good*** that you could say to your customers—

"Take this pound of KINGNUT home. Try it in every way, and if you're not delighted with it, I'll refund your money without question."

Kingnut

The Nut Margarin Sold on a Money Back Guarantee

You are authorized to make such an unconditional guarantee on KINGNUT. If you're ever called upon to return a customer's money—you will be refunded the full price by us. You cannot lose.

This confidence-creating guarantee makes the first sale; the superb quality brings the repeat orders.

Carry KINGNUT! Push KINGNUT! The sales are big, the turnover quick.

Kellogg Products, Inc.
BUFFALO, N. Y.

SOME FACTS and OPINIONS

About Questions Now in the Foreground

A Hundred Years of Canning

CANNED food was unknown on this continent until one hundred years ago Ezra Daggett and Thomas Kensett of New York, succeeded in canning or packing in a crude way salmon, lobsters and oysters. Meanwhile, in Boston William Underwood and Charles Mitchell, using heat, which we now call sterilization, in 1820, succeeded in packing some damsons, quinces, cranberries and currants.

Credit for the discovery of the method of keeping perishable food by heat and sealing in air-tight containers, however, belongs to a Frenchman, Nicholas Appert. Appert, stimulated by an offer from Napoleon of 12,000 francs to anyone who would discover a method of conserving fresh food so that he could improve the diet of his troops, after fifteen years of experimenting, in 1810 discovered the method of using heat to preserve food in sealed jars. Appert, however, never understood the scientific basis of his discovery, nor did succeeding canners have any clear idea of why the process worked, until after the great bacteriologist, Louis Pasteur, discovered bacteria.

Using Pasteur's discovery, Prof. H. L. Russell of the University of Wisconsin, in 1895, found that the spoilage certain pea canners were having was due to bacteria which resisted their process and that higher temperature of sterilization was necessary. Professor Russell's experiments were confirmed in 1896 by Professors Prescott and Underwood of the Massachusetts Institute of Technology.

In 1840 Baltimore began the canning of oysters and in 1841 Maine started its sardine industry. It was not, however, until 1856 that canning began on the Pacific Coast. The first canning factory in the center of the country was established in 1860 for feeding troops in the Civil war.

Food From Micro-Agriculture

WILL the agriculture of the future be concerned, in its production of foods, with the microorganisms rather than with the plants of garden or field? A suggestion that this may be the case appears in a paper read before the Society of Chemical Industry in London by A. Chaston Chapman. From an abstract in *The Lancet* (London, Nov. 29) we learn that recently discovered microorganisms have the power to build up fats and protein from the salts of ammonium in a few hours, thus developing food-products from inorganic material in far less time than it takes ordinary vegetation to do it. If some process of the kind can be carried on in a large way, we have the possibility of growing food rapidly and without any direct use of Mother Earth. This is, of couse, not chemical synthesis; it is a vegetative process as truly as that of the garden, but under conditions that open up a vast field for speculation. Of Mr. Chapman's paper *The Lancet* says:

"So important, he thought, were the developments in this field that he pleaded for the formation of a national Institute of Industrial Microbiology. When we consider, he said, the wonderful synthetic processes accomplished by the leaves of plants under the stimulus of light, the formation of starch or of protein in the growing plant, the conversion of carbohydrates into fat in the animal organism or by some of the microscopic fungi, or any of the numerous instances of enzyme action; and when we compare the ease and completeness with which these complex transformations are effected at ordinary temperatures with the clumsy and often wasteful syntheses of the organic laboratory, we must realize how far we are still from understanding Nature's methods, and how much we have to learn before we can hope to imitate them. He quoted the following remarkable instance, among many, of the powers of synthesis possessed by microorganisms.

"One of the professors of the Institut für Gärungsgewerbe in Berlin received in 1916 from a pupil stationed on the Eastern front a small specimen of a growth found on the stumps of certain trees in the district. After considerable investigation it was found that the growth contained an organism which exhibited some very interesting features. Thus, not only did it produce under certain conditions considerable proportions of fat, but it also had the property of building up crude protein from ammonium salts (without any form of organic nitrogen) in the presence of phosphoric acid and traces of compounds of potassium and magnesium. Since, as Mr. Chapman points out, ammonium salts could be obtained readily from the air, and inasmuch as the carbohydrates resulting from the acid hydrolysis of wood could be used as a source of carbon it was clear that this organism rendered it possible in the short space of thirty-six hours to build up fat and protein from such comparatively cheap raw materials as ammonium phosphate and the acid conversion products of sawdust.

"It is some years ago now that the late Sir William Crookes urged the importance of manufacturing fertilizers from the air by the formation of nitric acid and the subsequent production of nitrate. That has been accomplished on a commercial scale, and a further step has been the synthetic formation of ammonia. If now our methods of cultivation, by the employment of microorganisms, prove feasible, the practise of agriculture may well lie in new directions, with the application of microbiological methods taking a prominent place. It is to be hoped, however, that such methods will not detract from the esthetic qualities of food, which are of well-known physiological importance."

Canning Enabled American Diet to Follow Flag

MORE than three billion cans of food, canned under modern American methods, were used to feed our own troops in the American Expeditionary Forces. It is largely due to the American canning industry that American diet can follow the Flag wherever our soldiers and sailors protect our rights, or wherever American pioneers blaze new trails for American activities.

To the improvements developed by modern canning science every family owes its ability to get succulent food the year round; to have fish far from the fishing banks, to enjoy meats away from production and to have milk for adults and especially the babies in cowless country, or when blizzards block the milk trains to our cities.

(Continued bottom next page)

The New Secretary of Agriculture

AT the age of 43 years this high honor has come to Mr. Mercdith. He was born Dec. 23, 1876, at the town of Marne, Ia., the son of a storekceper.

Early an Agriculturist

His interest in agricultural lines dates back to the time when he was a small boy. His father had taken a small pig in trade for groceries. The pig was puny and very unpromising.

"If you can raise this pig you can have him," the father said.

From that time on the 13-year-old Edwin Meredith gave all his spare time to thc pig. He raised it to be a healthy hog.

Years later, two years ago to be exact, Mr. Meredith still remembered the gift from his father, and purchased a number of pigs, which he turned over to members of boys' and girls' pig club at cost, the money to be paid back when the pig had matured.

After Mr. Meredith's father tired of shop keeping, he movcd his family to a farm near Marne, Ia. Here Mr. Meredith received the ground work in agriculture.

Came Here 24 Years Ago

However, he wanted an education and twenty-four years ago, when 19 years old, came to Des Moines.

Staying at the home of his grandfather, Thomas Meredith, the young man attended Highland Park College. He paid for his board and room and college expenses by doing odd jobs, working as a waiter in a lunchroom and tending furnaces in the winter.

During the last vacation of his term at the college, Mr. Meredith went to work in his grandfather's farm publication printing office, and learned the trade.

After leaving college, at 21 years, Mr. Meredith accepted a position paying $8 a week, on the farm paper.

Sells Farmers Tribune

The paper, called the *Farmers Tribune,* was a political publication and not a success. Thomas Meredith, the grandfather, rcalized this and decided to sell.

E. T. Meredith and a printer decided to buy the paper and the deal was completed, the former paying for his interest with a note. Soon the partner tired of the work, and Mr. Meredith purchased his interest, and became solc owner.

He had seen mistakes of his grandfather, and decided to print a non-political farm publication. He hit upon the name of *Successful Farming,* and in October, 1902, published the first edition, of sixteen pages.

The publication carried no advertising, and its circulation was small. Today the circulation of *Successful Farming* is 800,000. Postage required to mail it is $10,000 an edition and 10,000 pounds of ink are necessary in the printing.

His Races for Governorship

During the state election of 1916 Mr. Meredith was a candidate for govcrnor on the democratic ticket. He was defeated by Gov. W. L. Harding.

Mr. Meredith has a "Three I" formula for success—Integrity, industry and imagination.

Successful Farming is not the only publication printed by Mr. Meredith.

Rural Schools Bulletin is published each month and sent free to teachers of the mid-western statcs. It is used as an aid in teaching agriculture.

Building Trade With Farmers is a service pnblication for country newspapers.

Farm Boys and Girls Leader goes to every member of boys and girls pig clubs in the state.

Mr. Meredith, aside from being thc secretary of agriculture, is president of the Associated Advertising Clubs of the World; director of the federal reserve bank; was member of the United States labor commission to Great Britain and France in 1918; was a member of thc President's industrial conference held at Washington, D. C., in 1919; was a $1-a-year man during the war, having charge of the excess profits division: served for two terms as director of the national chamber of commerce.

Even more important is the fact that through canning the plenteous fruits and vegetables of harvest seasons; the great catches from our fishing banks during spring, summer and fall; the juicy meat of the grazing season and the flood of summer milk can be held over for winter use when production is interrupted or lessened.

Little Skim Milk Thrown Away

APPARENTLY very little skim milk was thrown away by milk dealers last year. The United States Department of Agriculture recently sent questionnaires to dealers in Boston, Philadelphia, Detroit and Pittsburgh, cities selected as typical. Only one dealer reported throwing away any considerable quantity of skim milk. Others report manufacturing their surplus into various products, including cheese, milk powder, condensed milk, buttermilk and casein. In Boston, Philadelphia and Pittsburgh the largest surpluses came in May and June. The season of large surpluses came earlier in Detroit, beginning in February and running through April. In the case of some individual dealers who do a considerable manufacturing business, as well as a market milk business, the surplus appears to have been large throughout the year. The Department of Agriculture reiterates the importance of utilizing all skim milk to the best advantage and points out that thc most economical way of handling it can not be determined as a general proposition, but must be worked out by each dealer for himself, says the Michigan Commissioner.

Honey Bees Making a Record

THE honey crop of the United States was 92.1 per cent of normal on July 1, according to the estimates of the United States Department of Agriculture. Reports to the Bureau of Crop Estimates warrant the estimate that the yield of surplus honey per colony was 25.8 pounds and that about one-half of the annual product per colony was realizcd by July 1. At the same date in 1918 the estimated surplus was 21.4 pounds per colony. At the same date in 1917 it was 13.5 pounds. The high condition of 92.1 per cent of normal on July 1 this year compares with 86.7 in 1918 and 86.3 in 1917.

Resume the Convention of the National Canners Association at Cleveland

THE Cleveland meeting of the three associations has gone down as the greatest in their history. Celebrating the hundredth anniversary of the canning industry complete financial and moral support for the inspection and advertising program of the National Canners Association was assured in dramatic fashion the evening of the opening day.

After Frank Gerber of Fremont, Mich., president of the National Association, and other speakers, had outlined the program of the extension of the advertising and inspection program, Walter J. Sears, of Chillicothe, Ohio, newly elected president of the national association, requested what might be called a vote of confidence in the program.

Delegates in all parts of the hall, representing the largest attendance in the history of the industry, rose to their feet. In less than ten minutes enough testimony was before the convention to make absolutely certain that the entire canning industry was backing the progressive movement.

Of importance was the adoption of the new certificate for the cans.

"At its April meeting in 1919, the executive committee considered this demand for national publicity, and decided by unanimous vote, to enter upon a well-considered plan of education." Mr. Sears said: "We are now in the midst of this campaign. I cannot stop to tell you how well it has been conceived, and organized. I simply desire to say that it is soundly financed, that it is strongly supported by the leading men of the industry in every section, and that its strength and permanency are guaranteed by an annual output of more than twenty million cases pledged to maintain it for four years. That it is well conceived, I only have to say further that it is based upon the exploitation of cleanly and wholesome foods, guaranteed by the Inspection Service, whose self-imposed standards exceed any standards ever set up by state or national laws.

"I ask every canner who has made the art of canning his life work, to come and stand with me upon this common ground. I ask it in the name of the pioneers who gave themselves unselfishly to laying the foundation of a great industry. I ask it in the name of the founders of this association, who dreamed of making their calling a better and nobler calling for their children. I ask it in the name of the highest public service, which must from this day forward be the compelling ideal of those who really desire to conserve the food supplies of the world."

Inspection Directors Meet

Discussing the service, H. M. Loomis, of Washington, D. C., the National Director of Inspection, said:

"American canned foods have had wonderful advertising in Europe during the war and a practical monopoly in many lines, but, with the return of peace, competition will return and the canner must prepare to meet it. Most of the canners of the country are awake to their unusual opportunities, and the novel plan of self-imposed inspection is rapidly extending to all branches of the industry. Starting with the sardine industry of Maine three years ago, it has worked out successfully also in southern California and was extended in 1919 to ten other states and Alaska.

"The inspection is founded on the principle that the inspection force, consisting of a director and his assistants in each state or district, shall be independent of the particular branch of the industry inspected, being responsible only to the executive officers of the National Canners Association, to which association are paid all assessments to support the inspection, such assessments being based on the number of cases of canned foods inspected."

D. H. Stevenson, chairman of the Tomato Section, spoke, in part, as follows:

"The enormously high prices which have prevailed during the past ten years for raw stock of tomatoes more particularly in the east or tri-state territory, is a matter which must of necessity command some attention, that is, if the east is to remain in the tomato canning business on a competitive basis with the central west and California. This question, in my opinion, is answered in one way only, and that is—yield of tomatoes per acre.

"The low yield in the tri-state territory during the past few years of only about two and a half tons per acre is just one hundred per cent responsible for the prices the east has had to pay for raw stock. The eastern farmers are entitled to their profit on a crop just the same as the farmer in any other part of the country and unless something is done at once along the lines of education in tomato agriculture to demonstrate to the farmer that a crop of tomatoes can be raised on one acre of sufficient quantity to make it a paying crop for him, he is either going to cease the planting of tomatoes as a canner's crop or else the ruinous prices for raw stock are going to continue, which will eventually put the eastern canner out of the game."

Gerber's Recommendations

Not only does the Cleveland convention mark the centenary of American canning, Mr. Gerber stated, but the meeting is destined to be historic, because it inaugurates the second century with a co-operative program on the part of the industry which will improve and increase its output, and thus give material assistance in the major post-war problem of feeding the world, by making possible a better conservation, distribution, and preparation of foodstuffs.

The association's plan, in its entirety, operates to assure the public wholesome and clean canned foods, in three ways, Mr. Gerber said. These ways are:

1. By inspection and identification of worthy products.
2. By informing the public of general facts concerning hermetically sealed canned foods sterilized by heat.
3. By showing how to identify and obtain the foods certified by the inspection service.

Among the recommendations of Mr. Gerber for future development

of the association were those for increased newspaper advertising and extension of the inspection service; for the organization of a Raw Products Research Bureau to operate in connection with the office of the secretary of the national headquarters in Washington, D. C.; the use of more accurately descriptive canned food labels with space for recipes and information relative to canned foods; and the establishment of a branch general office on the Pacific coast.

Further Research Assured

Announcement that arrangements are being made with Stanford University and Hooper Foundation for research in connection with food preservation, similar to that already being done at Harvard under the direction of Dr. M. J. Rosenau, was made by Frank E. Gorrell, of Washington, D. C., secretary of the National Canners Association in his annual report.

Valuable results in pointing the way to preparation of more wholesome canned foods have been attained by the studies made by Dr. Rosenau, covering a period of three years, the secretary stated. These have been supplemented by the extensive work in the association's own laboratories, and now are to be further amplified by the experiments at Stanford University and Hooper Foundation.

Discussing sauerkraut production as controlled by heat, Dr. E. Le Fevre, Bureau of Chemistry, Department of Agriculture, reported that investigations in the Bureau of Chemistry have shown that the organisms instrumental in fermenting sauerkraut require as their optimum a temperature of 86 degrees F. It has also been shown that they fail in biochemical activity in practically the same ratio as the temperature falls below their optimum. These results suggested the importance of utilizing the aid of heat in the commercial production of sauerkraut. To determine whether it was possible under factory conditions to secure in cabbage the proper degree of heat and, if so, how this could best be done, experiments were carried out in the factory of the Empire State Pickling Company, Phelps, New York.

New Officers Elected

Walter J. Sears, of Chillicothe, Ohio, was elected president; Harry P. Strasbaugh, of Aberdeen, Md., vice-president, and Frank E. Gorrell, Washington, D. C., re-elected secretary.

Directors elected were: J. E. Barr, St. Cloud, Minn.; Harold I. Berg, Onalaska, Wis.; Roy Nelson, Marshfield, Mo.; Merritt Green, Jr., Marshalltown, Ia.; J. E. Grier, Pasadena, Calif,; Harry McCartney, Greenwood, Ind.; Charles H. Tugwell, Wilson, N. Y.; J. J. Rogers, Pendleton, Ind.; W. B. Stokely, Newport, Tenn.; Sid R. Clift, Ames, Ia.; P. H. Troutman, Canon City, Colo.; Robert J. Peacock, Lubec, Me.; and Gage B. Rodman, Ogden, Utah.

J. H. McLaurin, of Jacksonville, Fla., president of the Southern Wholesale Grocers Association, called attention to conditions arising out of the war that threaten stagnation for American business. Pointing to the state of foreign exchange and European credits he warned that a time soon may come when Europe will be unable to buy American products. He pointed out we can expect more aggravated labor troubles if these conditions of foreign exchange cause Americans to be thrown out of work in large numbers.

Suggestions that the men handling canned foods are profiteeers comprise a grave injustice upon the canners and wholesale grocers, it was declared by H. A. N. Daily, president of the Canned Foods and Dried Fruit Brokers Association.

"Inflated currency and depleted production are the cause of high prices," said Mr. Daily. "There is no profiteering in the food business." The government, by casting army food on the market will have absolutely no effect on prices, he declared. Mr. Daily pointed to the necessity of carrying through the national advertising program and predicted hard times for the canners, should they go back to the old policy of covering their light with a bushel."

Covington Applauded

Hon. J. Harry Covington, advisory counsel, National Canners Association, declared the life and promise of the industry lay in following the program of inspection, certification and advertising.

"I heard meat packers say in Congress years ago," said Mr. Covington, "that government inspection would wreck the packing industry. I heard men solemnly say that the passage of the pure food and drugs act would ruin fundamental industries. Today inspection has come to be the salvation of these industries."

The canner who imagines he will sell his uncertified goods after the association's program of inspection has become established in the public mind, Mr. Covington pointed out, will be sadly disappointed.

One single season after the association's inspection label has become known to the people, he maintained, practically no canned foods will be sold in the United States without that label."

Judge Covington was undoubtedly one of the finest orators heard in the convention. He was formerly a member of Congress and served as chief justice of the Supreme Court of the District of Columbia. His address at Cleveland was received with enthusiasm and applause.

"There is only one way an industry can produce results when it has such a program of inspection and education ahead of it," Judge Covington concluded. "That is by co-operation. And the spirit of co-operation must not come from the relation the immediate expenditure has to profit."

The bean canning craft approaches the 1920 pack with every assurance of a larger demand upon their capacity than ever before, according to E. P. Gale of Marshalltown, Ia.

"Export orders for most canners are but a comparatively small percentage of our volume so we are freer from the uncertainties arising from world affairs than are most other lines of manufacturing," he continued. "The field for canned products, and this is emphatically true as regards the canned bean section, is the closely cultivated home market. Public demand is increasingly louder for quality — and the better class of canners everywhere are bending every effort to answer the call.

"The acute servant problem is forcing a widespread household acceptance of our packs so that trade resistance is less than it would ordinarily be."

Dr. Wiley's Address

Dr. Harvey W. Wiley, former chief of the U. S. Bureau of Chemistry, referring to his own household, said:

"We have stopped growing peas in our garden in Virginia because we can get cheaper and better peas by buying them canned."

Pointing out that he himself was not a believer in vegeterianism, Dr. Wiley declared that those who are should choose leguminous rather than starchy vegetables for their diet.

"For there is nitrogen in leguminous vegetables, such as peas, and nitrogen is a tissue builder, making bone, teeth, muscle and nerves. As a matter of fact," he added, after

praising the canners for their service in providing these nutritious vegetables, "most folks eat too much meat. That's why the blood pressure of many people is so high. They would be better off if they reduced their meat diet and ate more leguminous vegetables."

The service of the canners by placing at the disposal of the public great quantities of food at a low price is of tremendous importance from a national and world viewpoint, Dr. Wiley declared.

"When millions are starving, when thousands and thousands of little children are dead and dying from lack of food, every pound of food added to the world's supply," he stated, "helps to bring abatement of the world's unrest."

Referring to the association's slogan — "Canned Food — the Miracle on Your Table"—Dr. Wiley stated that this, like all other so-called miracles, "has come through the logical sequence of events."

"What we call a miracle," he added, "is the result of finding the laws of nature and turning them to forms of service. And that's just what this Canners Association is doing. It's needless for me to say that any activity not intended for human benefit has no place in any locality. This association is rendering a real public service."

Dr. Bigelow Speaks

In a series of addresses before the various sections, Dr. W. D. Bigelow, chief chemist of the association, gave some of the results of an investigation of the processing of canned foods which is now being conducted by the Research Laboratory of the National Canners Association. He said, in part:

"This work, which makes it possible for commercial canners (or home canners, for that matter) to work with much of the precision of the laboratory, is the culmination of the researches made just twenty-five years ago by Dr. Russell of the Wisconsin State University.

"When Dr. Russell took the matter up spoilage in canned foods was much more prevalent than it is today. He showed that this spoilage was due to bacteria, whose spores survived the process then given. Increasing the time and temperature of sterilization seemed to stop the trouble.

"In recent years canners have rarely had much spoilage, but exceptional cases have occurred. There occurs from time to time, now in this plant, now in that, a considerable number of 'swells' or 'flat sours.' Some canners, expericncing this for the first time, have been inclined to regard it as a mystery that could not be avoided. Others have attributed it to defective material used in connection with their pack, such as defective cans or impure sugar or salt. The Research Laboratories of the National Canners Association have subjected this problem to something the same line of attack that is used in studying epidemics of human diseases.

"The bacteria causing the 'swells' and 'flat sours' have been isolated and studied in the laboratory. The spores of the several bactcria are heated with the various foods that are difficult to process, to determine how long they must be heated at certain temperatures to kill them.

"Then the heat penetration of the various foods is determined. This is done by means of an ingenious apparatus which the laboratory has devised which shows the temperature of the center of a sealed can while it is being sterilized either in an open bath or a pressure kettle. Putting together the results of these two investigations the laboratory can suggest the retort management with the various foods, necessary to destroy the particular bacteria studied. Since these are the most resistant bacteria the laboratory has encountered, it is believed that a process which will destroy them will insure sterilization.

"In addition to the bacteria causing 'swells' and 'flat sours' in various foods, the laboratory has studied two organisms in evaporated milk which resisted processing and subsequently caused the milk to turn bitter. One organism was studied which spoiled canned hominy by giving it an unpleasant, sweet taste."

Dr. Rosenau's Paper

Regret was expressed at the absence of Dr. Rosenau because of illness. For the past three years he has been director of a group of scientists who have devoted all their time and energy to the study of food poisoning. The work has for the most part been done in the Department of Preventive Medicine and Hygiene of the Harvard Medical School. It is supported by a grant to Harvard University from the National Canners Association.

Dr. Rosenau in the paper he intended to read at the convention gave an account of his stewardship, and briefly explained in plain language some of the results that had been obtained.

The first thing that struck the doctors was the relative scarcity of cases of illness which could be attributed to food. When the work was begun, the impression prevailed that "ptomaine" poisoning was one of the commonest of ailments. Many cases were studied, but most of them proved to be due to some other cause than that of food poisoning. Some were cases of bacteriological infection, even dysentery; some were accidental poisoning with chemicals, such as caustic lye or saltpeter that got into food by mistake or design; some of the cases were simple indigestion, and one was an instance of sunstroke. An outbreak in Chicago called "ptomaine" poisoning proved to be due to tartar emetic that was put into the food with malicious intent.

Dr. Rosenau went on:

"Practically all the cases that came to our attention were traced to either fresh food or home-packed products. By fresh food I mean food that is not canned or preserved in any way. Such 'fresh' food, especially when prepared as salads, sausages, hash, and other mixtures and messes, that are fingered and fussed over and often kept for hours before being eaten, are apt to become infected with bacteria from human sources. Bacteria grow very well in foodstuffs of this kind, especially if they are not kept cold, and the process of preparation favors the appearance of harmful germs from manipulation by the cook in the kitchen.

"Fire is the great purifier. Cooking is the greatest sanitary protection we have against infections of this kind. Canned goods are entirely free from the danger of conveying the infections in question, on account of the processing necessary to preserve the contents of the can in good condition. The safety of canned foods lies in the fact that they are thoroughly cooked.

Ptomaine Theory Discredited

"So far as 'ptomaine' poisoning is concerned, we are now prepared to state that there is no such thing. Our chemists looked in vain for ptomaines; that is, for poisonous decomposition products of protein putrefaction, and I think it is now generally accepted that there is no such thing as 'ptomaine' poisoning as that term was once understood. One example is instructive and illustrates the kind of work that keeps so-called 'ptomaine' poisoning alive. Nine students had a fraternity dinner, at which the piece de resistance was a turkey. Some time during the night, most of them were attacked with cramps and diarrhoea, and sus-

(Continued on page 32)

Botulism

By WALTER L. DODD

Assistant Director of Sanitation and Hygiene, Pease Laboratories, New York

MRS. WILLIAM TRINNER was getting supper. The oven door was giving forth the crisp fragrance of sizzling

browned fat from a juicy leg of lamb. The potatoes were boiling merrily upon the stove, while on the window edge beneath the fluttering curtains, a pan of flaky biscuits was cooling. Nearby little wisps of steam arose from the cinnamon sprinkled crust of an apple pie. On the table an opened pot of honey sparkled invitingly in the warm glow from a shaft of sunlight.

"A vegetable would be tasty," thought Mrs. Trinner. "Something that would go well with roast lamb. Ah, just the thing."

She emerged from the dark depths of the vegetable closet with a jar of string beans, canned last summer, dewy fresh from her garden. A jet of burbid liquid stained her apron as the cover was withdrawn. The beans themselves did not look as good as usual; seemed to be a little mushy. Perhaps she had better taste to make sure. Were they a little off flavor, or was it her imagination? Another nibble should tell. Yes, they were somewhat sharp, but she guessed they would do. Too bad to waste a whole jar of beans.

She turned half the jar into a pot and pushed the potatoes to the simmering heat at the back of the stove. A stench rose from the turbulent beans, a rancid ider like that of spoiled cheese. Its rankness overshadowed the fragrance of the other wholesome cooked food in the kitchen. No, those beans would never do. The chickens could eat the jar contents.

Two mornings later it was an effort to get up, a muscular weakness out of all proportion to the previous day's tasks. And her eyes were playing strange tricks, a single object close by appeared double, distant objects seemed more normal. Perhaps it was because she couldn't seem to get them fully open. A little air would do her good. She'd run out to the hen yard.

Here another surprise greeted her. Several of the chickens were already dead, others occupied dejected attitudes, heads drooping on limber necks. Idly she wondered if the beans she had thrown to them had anything to do with their sickness.

The next morning she felt no better. Walking was difficult; she stepped with an odd lifting of the feet, as if walking upstairs. Her head was lolling even as the chickens. At times she had to hold it steady, cupping the chin in her hands. But sick? Pshaw! Impossible! She hadn't a trace of fever.

Evening found her struck down.

Her throat felt dry, swallowing was difficult. Frequently she choked. Words were fumbled.

At times her mind was cloudy. She seemed to see the jar of beans she had discarded, its murgy fluid, turgid with gas bubbles, which scthed and hissed tirelessly up and down the glass sides. Suddenly they rushed together in a menacing cluster and merged into a ghostly human hand, which writhed its way from the jar. Swiftly it gathered shape. The straining fingers—lean, strong, deadly, flexed convulsively, eager to grip tender flesh. It was the hand of a strangler. Closer it crept to her shrinking throat.

The coarse hair on the back of the hand rasped her chin as the lethal talons played on her throat, seeking the throttling clutch. They tightened, bit in, sunk deep—deeper—deeper.

No, she did not die. The symptoms became more severe for several days, but the patient was not absolutely confined to her bed, although unable to work. Severe pains and a mucus-filled throat jeopardized her for nearly a month. Another month and she was practically well, but a half year later she continued an unusual tendeney to headache and hoarseness of the throat.

What hazarded her life? She was the victim of a strange new food poison—botulism.

The striking symptoms and high fatality of this disease has made it conspicuous far beyond its value as a cause of death. In the past quarter-century there have been but sixty-four cases reported. Of these stricken people only a third recovered, grim evidence of the terrible potency to this invisible poison. Like prussic acid or stryehnine, the merest trace may be fatal.

A housewife with a teaspoon tasted some home-canned corn, which appeared spoiled. In a few days she choked to death. Another nibbled a string bean pod of her own canning. Within a week she gasped her life away. A man ate an olive. Three days later he was dead.

Botulism has undoubtedly existed for many years, deaths, with characteristic symptoms, as a result of sausage poisoning being reported before the disease was identified. The actual cause of the disease has only been demonstrated in comparatively recent times, 1894, by the scientist, Von Eremengenn, who studied a series of cases in Belgium. Twenty-three persons became ill, with three deaths, from eating brine preserved ham. From parts of this ham and from the bodies of victims Von Ermengenn isolated a germ to which he gave the name Bacillus botulinus, after the Latin word, botulus, meaning a sausage.

By what seemed to be a strange caprice, the fatal poison was only found by him in a ham which had lain submerged in the pickling fluid. An uncovered ham above was harmless. Apparently measure was necessary for the toxin to form. Later it was found that air and light must be excluded, as well.

Botulism outbreaks have been reported from Belgium, France and Germany. Oddly enough, Great Britain appears to be exempt. In the United States the large majority of the outbreaks have been in California or occasioned by foods packed in that state. Cases have occurred in Idaho, Colorado, Indiana and Massachusetts.

The disease is fatal for many animals. Horses and mules have died after eating moist hay or corn ensilage. The disease known as "forage poisoning" is similar to botulism in humans and the specific poison producing germ has been isolated from feed given these animals. Chickens who have eaten spoiled can goods, which was fatal for humans, died from a disease known as "limber neck." Advan-

tage can be taken of the fact that the chicken frequently becomes ill almost immediately and dies in a few hours, as humans do not usually feel ill for several hours after ingesting the deadly food.

Death in the chicken before human symptoms appear gives the advantage of seeking prompt medical attention. Suspected food might also be tried out on these feathered danger signals.

The situation is reminiscent of medieval days when monarchs employed official tasters to determine that no poison lurked in the dish intended for the royal palate.

Besides horses, mules and chickens, other household animals and birds, as goats, dogs, cats, rabbits, white mice, turkeys and pigeons are reported as susceptible. Various species of flies and the common garden spider have been shown to act as distributors of the infection. The pig has been indicted as a carrier, the germ being isolated several years ago in a single instance from the intestines of a so-called healthy hog. More recently the fateful organism was not found in several hundred sound hogs, but was discovered in the excreta of a hog known to have recovered from a previous attack of botulism.

Until recently it was thought that the poison developed only in meat products, particularly those of the pig. About twenty years ago American physicians began to report cases where the evidence strongly pointed to various home canned products as string beans, asparagus, corn and apricots. Cheese has also been accused. The dispute arose as to the possibility of a similar danger from factory canned goods.

The consumption of canned goods in the United States probably totals 250,000,000 cases annually. Commercial canning of food was first undertaken about 1800. Originally glass containers were employed, but tin quickly came into use. The food products were heated in an open bath; it was not until 1897 that steam processing became general. The first technical examination of canned goods was made two years earlier, 1895, on some "swells" among canned peas in Wisconsin. It was found that an increase in the temperature, the steam pressure and the time of exposure decreased the number of "swells" from 5% of the run to a negligible factor. This work marks the beginning of a scientific knowledge of foods and methods of control.

Now, besides various official laboratories, there are private institutions whose healthy experience in this particular work can be utilized with profit. In fact, the private laboratories were the first in the field.

Recent experiments have shown that not all commercially canned food products are sterile. In an examination of over seven hundred cans 8% were found to contain living organisms. Canned vegetables and fruits were more frequently sterile than meat or fish, furthermore, the organisms found with fruit were usually the more or less common moulds, the bacteria being associated more frequently with the meat products. The botulism organism was not found in this particular series of examination.

The first apparent cases of botulism resulting from factory canned products were reported in 1916. The vegetables, string beans or spinach were canned in Kansas and poisoned seven people, five of whom died.

It is only recently that this disease has attracted attention and little is known regarding the natural habitat of this ominous germ. Outside of human cases and poisoned food, it has been isolated in but a few instances—bird-picked and slightly bruised cherries purchased from a first-class grocery; the excreta of a "healthy" hog who had had botulism three months previous; spotted leaves of garden pole string beans, also spiders found on or near these leaves; the claw of a garden bird, moist stacked hay and stored corn ensilage. Judged by these few sources it would appear that the Bacillus botulinus has a somewhat universal distribution. It is not at all unlikely that this germ passes from the intestines of animals and birds who have had the disease to the soil and hence returns to another animal or bird with their food.

It is not likely the cycle is somewhat like this: Food containing the germ and its poison is thrown to animals. They eat, many die, a few survive. By means of their excreta the germ enters the soil and is carried to garden fruits and vegetables by birds or insects, possibly in the blown dust.

Washing of the picked fruits that is not as thorough as it should be, coupled with inadequate sterilization, permits the germ to hide unsuspected in the canned products where with proper conditions it generates its mortal poison.

For it is a singular fact that the germ itself is harmless: it can be taken into the body with impunity. It is the poison, manufactured by the germ from food that is fatal. And this poison is destroyed by heat.

The Bacillus botulinus, in common with several other germs, has as many lives as the proverbial cat. When factors necessary for the germ's survival become difficult, several are able to form little seeds, technically known as spores. From these seeds or spores new germs develop, analogous to the propagation of perennial plants over different seasons from seed to flower and from flower to seed. A heat just sufficient to destroy the growing Bacillus botulinus will not destroy in the seed, or resting stage, that is, the spores from which fresh germs reproduce.

The Bacillus botulinus has another peculiarity. It does not thrive in the presence of air. Neither does it enjoy light. It insists that its food supply be moist.

Starting with the contamination of fresh foods with the Bacillus botulism it is apparent that any heedless washing and inadequate cooking processes, followed by storage of the moist food in airtight, light proof containers as the vacicum sealed tin can, would permit the germ to get into the can and there generate its deadly poison.

These are the facts in regard to the Bacillus botulinus. A slightly different picture exists for its poison. While the poison also shrinks from light or air, either of which is destructive, it differs from the germ in that it is quickly destroyed by the heat of ordinary cooking processes. Neither is the poison produced, except rarely, at the ordinary body temperature of warm blooded animals. There is another very important point necessary for the production of poison in the food by the germ—the element of time. The rapidity of the poison's full development undoubtedly varies with different foods, their manner of keeping and the virulence of the germ itself, but even under perfect conditions it is unlikely that fatal quantities of the poison are formed until after many days' storage of the canned product.

What protection is there to this fatal poison? Why is it not more commonly found? Fortunately, there are several preventive measures which protect us from this jeopardy.

The first line of defense is to prevent the Bacillus botulinus from gaining access to the canned food. To this end fruit should be carefully selected for its soundness, fol-

lowed by vigorous, thorough washing to completely remove any adherent matter.

The home kitchen or the canning factory should be immaculately clean. In this connection a recent writer speaking of another unwelcome germ, Bacillus welchii, sometimes found in canned products, says: "The presence of this organism in food indicates unsatisfactory methods and should lead to a careful sanitary survey." This is an excellent suggestion. However, periodical sanitary surveys of the scientific but practical type, not the superficial inspection for mere dirt, but the painstaking sanitary survey, digging out the hidden menaces by means familiar to the bacteriologist, are a decided advantage over the single survey made only when trouble exists.

Sterilization should be adequate, not only to kill germs, but to destroy their spores, which are so heat resistent as to survive several hours' boiling. Pressure steam processing, properly done destroys germs and spores. This efficient factory process may be contrasted with the ordinary home canning methods which depend on the boiling of water for the source of heat.

The solutions in which the foods are preserved may have a hampering influence on the production of the fatal poison. Sugary solutions as ordinarily employed in canning processes without much doubt exercise a well-marked restraint. Foods put up in brine solutions of more than 6% strength are considered to inhibit poison formation.

Another valuable defense, under present conditions, is the use of educational publicity such as the printed page or more direct appeals. The housewife can be taught protection through the use of two senses—sight and smell.

If the food within the container, either home or factory canned, can be seen and has an unusual appearance, mushy, filled with gas bubbles or otherwise unnatural, it should be regarded with suspicion. Likewise an opaque container which has swollen ends or squirts a jet of the liquid contents when punctured, should be viewed with mistrust. Most cans are normal, with wholesome contents, and by no means do all "unnatural" cans contain the deadly botulism poison.

When the container is opened it should be held to the nose. A characteristic odor, such as comes from rancid cheese or butter, calls for the immediate destruction of the contents, by heat.

Tasting of doubtful products is extremely hazardous, because of the terrible potency of the poison. It should never be attempted.

The cooking of food before use should be encouraged. In one of the reported cases a woman opened some home-canned asparagus. She noted its contents were a "little sour," but, as was her habit, drank the liquor and cooked the stalks. Her son, suspicious of the smell from the boiling asparagus, tasted a piece and threw out the pot contents. Four days later the mother was dead, the son healthy. The slender balance between life and death in these two instances hung by but a few moments of time. The mother consumed the uncooked product fresh from the opened container, the son did not eat until after it had received several moments of heating.

But why throw the burden of protection on the consumer? It is a responsibility the manufacturer should voluntarily assume.

Adequate washing of the raw vegetables or fruits, the intelligent application of sanitation by a practical service and thorough cooking, are very important barriers. They are especially important because modern canning processes are designed to exclude oxygen from the can—a condition embraced with delight by the Bacillus botulinus, growing as it does only when the air is sealed out. Furthermore, the sealed tin can affords the necessary darkness where the stealthy development of the lethal poison may proceed. But two other factors are vital for poison formation—low temperature and time. The canner can take advantage of these facts to protect the consumer.

From each batch, previously identified by some recording system, cans should be selected at random. High temperatures are a part of the "growing" season when canning is carried out, so for this reason these selected cans should be stored in a room of cool temperature. Otherwise if kept at ordinary warm summer room temperature poison production within any contaminated cans might easily be restrained until the release of the product to seasonal temperatures more favorable for poison formation. With the storage at cool temperature, poison development could proceed and after a sufficient lapse of time for its formation tests of the filtered product could be made on suitable animals. These simple precautions would prevent poison infected cans from being released on the market. Other tests might well be added, such as the determination of various germs of intestinal type, frequently associated with "food poisoning."

Furthermore, careful record keeping of batches from which tests were made would place the manufacturer in a strong position when a needless cry of "wolf" was made.

As it is now he is forced to take the defensive attitude.

It is to his advantage to assume every possible means for the protection of the public.

Prominent Food Manufacturer Endorses Uniform Laws in Merchandising Foods

We are very much in accord with the principle announced in the resolution adopted by the National Confectioners' Association, discussed in your June number, to the effect that Congress be called upon to enact a law that will give food shipped in interstate commerce the fullest protection from being interfered with by State Officials and State Food Laws. We understand the trend of the Supreme Court decisions, in which State laws containing provisions which differ from those of the Federal Food and Drugs Act have been upheld, is that the Federal Food and Drugs Act is limited in scope, and those State laws which are not inconsistent with Federal Food and Drugs Act, but which relate to matters not covered by it, are valid. It seems to us that in order to obtain the relief called for by the National Confectioners' Association, it is desirable that manufacturers of articles of food should get together and formulate a definite program, to the end that definite legislation may be suggested to Congress which will accomplish the purpose.

It seems to us that if the proposition of the Secretary of Agriculture appeals to manufacturers of foodstuffs generally, and they are generally disposed to prepare a bill and urge its adoption, it would go a long ways toward relief from interference under State laws of articles which are legal under the Federal law.

This matter is pressing, and we trust that it will receive full discussion both by manufacturers and food officials, and that the discussion will develop into the formulation of a program, calculated to accomplish the desired end, which all manufacturers can support.

New Methods of Food Dehydration*

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THE question of food dehydration is obviously connected with the geographically and seasonally uneven distribution of the food production of the world. It is one of the attempts to equalize artificially the distribution so as to make suitable quantities of food available everywhere and at all times.

In the methods used to make foods available at times different from those at which nature supplies them, and in places distant from those where they are produced, certain general factors or principles are involved.

In the preservation of food, its handling, storage and transportation, first and foremost to be considered is the safety factor. Food must not be allowed to become toxic. Bacterial growth is often taken to indicate spoilage, so that prevention of such growth is of the first importance.

Passing from and connected in a way with food spoilage, the second factor to be considered in food preservation is the question of the development of certain pathological conditions arising from the lack of chemically unknown constituents in diets apparently adequate in protein, fat, carbohydrate, mineral components and calories. These chemically unknown constituents include the so-called vitamines, substances possessing antiscorbutic property, growth producing property, etc., and may be classed together under the general term of food hormones. Though food hormones have only become prominent in recent years, yet their importance is evidenced by the large number of investigations at present in progress dealing with them.

The next general factor to be considered includes transportation, as well as storage facilities. Transportation has always been a question of vital importance, due first to the fact that the agents of transportation, including ships and other common carriers, are always at a premium, and second to the fact that for the transportation of certain kinds of food special equipment, such as cold storage, is required. For example, the plentiful supply of sheep in New Zealand where the cost is said to be twenty-five cents an animal might benefit the rest of the world to a greater extent if more transportation facilities were available.

The fourth factor is that of palatability. In this connection suitable preparation and the cultivation of taste can go far to neutralize any inherent defect. There is, however, an irreducible minimum. For example, refrigerated fish and sun-dried meats are not satisfactory. Navy men readily recall the miserable dried foods which they were asked to use thirteen or fourteen years ago.

The final general point to be considered includes the economic aspect. This involves production and distribution costs. Also the problem of introducing to the general public foods prepared in new and different ways must be considered, and might come under the general heading of advertising costs.

Food preservation in one form or another has been practiced apparently for as long a time as human records are available. Sun drying of foods is perhaps the oldest method which has been used. Other methods which have been or are being used and which may be mentioned include treatment by heat or by cold, addition of various substances such as salt, formaldehyde, salicylic or benzoic acids, etc., and drying in one way or another.

	Refrigeration	Canning	Sun Drying	Air Process Drying	Vacuum Drying
Safety Factor	O. K.	O. K.	O. K.	O. K.	O. K.
Food Hormones	Unknown	Variable	Unknown	Variable	Favorable
Transportation Facilities	Very Poor	Poor	O. K.	O. K.	O. K.
Palatability	Meats—O.K. Fish—Poor	O. K.	Meats, Fish } Poor; Fruits—O.K.	Meats, Fish, Fruits } Poor; Vegetables } O.K.	O. K.
Economic Considerations:	Poor	O. K.	Doubtful	Favorable	Favorable

Three of these methods, refrigeration, canning and sun drying may be considered in more detail by reference to the accompanying table. The safety factor is satisfactory in all three. The food hormone properties are unknown except in isolated cases of canned products where they are found to be variable. Perhaps fortunately for some of the older processes this factor was not considered when these products were first introduced. Transportation facilities are obviously very poor in the case of refrigerated products, not good for canned products because of the bulk, but satisfactory for sun dried products. The palatability factor is unsatisfactory for frozen fish and sun dried meat and fish. With regard to the various points involved in the economic question, for the refrigerated products the result may be said to be poor, satisfactory for canned products and doubtful for sun dried products.

These three methods are mentioned to illustrate some of the older means of food preservation. No substance which might act as preservative is added in any of these methods except for some of the older forms of jerked beef, which was also smoked. It is evident that these methods, while satisfactory within limits, leave a great deal to be desired, and offer room for improvement and development.

About twenty years ago a new departure in food drying was begun. In place of depending upon the sun and wind to remove the moisture from food substances in order to prevent bacterial and other growths which cause spoilage, the same result was obtained artificially. Heated air was passed over the foodstuffs and moisture removed by this means. Evidently this permitted of a closer control of conditions of heating, quantity of air and moisture content of such air. This was the beginning of the newer developments in dehydration. At first the development was slow, but as conditions became better known, progress was more rapid, especially in the last five years. For example, in Germany in 1898 there were three

small drying plants. In 1906 the number had increased to thirty-nine, in 1909 to one hundred and ninety-nine, in 1914 to four hundred and eighty-eight, in 1916 to eight hundred and forty-one, and in 1917 about one thousand nine hundred plants were in operation or under construction. It was stated in a recent Government publication that the total quantity of potatoes alone dried in Germany in 1917 was more than three times the total potato crop of the United States. During 1915, 1916 and 1917 Canada prepared for the British army about forty-four million pounds of mixed dried vegetables for use wherever England had her armies. In 1918 the United States Army purchased many thousand tons of dried vegetables. At the present time there are about thirty plants operating on dehydrated vegetables in the United States.

These facts show the extent to which the newer methods of food dehydration have developed. They apply almost exclusively to vegetables and fruits. In them, carefully regulated currents of air, properly heated and containing definite amounts of moisture, are passed over the foodstuffs. Water is removed in this way and the structure, color and flavor of the foodstuff retained in its original form as far as possible. Very often the foodstuff must undergo a preliminary treatment. Potatoes and other vegetables must be heated, and apples and a number of other fruits treated with sulfur dioxide, or blackening would occur during dehydration. Two general methods of processing are in use, the tunnel method and the kiln method. In the tunnel method the food, properly prepared, is introduced on screens or racks into tunnels or chambers through which the current of heated air is passed. Exact control of conditions cannot be practised here. In the kiln method, the food is placed on the perforated floor of a square chamber with sloping roofs, and heated from below by means of a furnace. The hot air passes upwards through the food, which is turned from time to time. The product obtained may possibly not be uniform.

A variant of the air dry process has been developed recently in the Middle West. Air containing a considerable percentage of moisture at the beginning of the process is passed over the food. The moisture content of the air is diminished gradually as the product dries, and is so regulated that the relative moisture content of the air and products permits of evaporation of water from the product. The apparent paradox of drying with moist air is explained by the fact that moist air has a higher specific heat, that is heat carrying capacity per cubic foot, than dry air. The products obtained by this method are said to be quite satisfactory.

After having been properly dehydrated, products are prepared for use as food by being placed in water for the requisite length of time, the time required varying with the vegetable or fruit, and also the state of division.

As stated, these new dehydration methods apply practically only to vegetables and fruits. The incentive to develop a method of food preservation applicable to meats as well as to other food products was given in November, 1917, by Colonel John R. Murlin, in charge of the Division of Food and Nutrition of the United States Army, in view of the then existing emergency. Such a process was developed by the speaker with the help of Dr. Edward M. Frankel and Professor Ralph H. McKee.

In the dehydration of meat the following seem to be the important factors: (1) the temperature of dehydration must be kept below the point at which the proteins coagulate and the fats melt; (2) with too low a temperature the process of dehydration will be unnecessarily prolonged with the result that often spoilage will occur and the overhead cost will be greatly increased; (3) if the removal of water takes place exclusively from the outer surface, as in the use of a stream of heated air, a cornified layer is likely to form, thereby preventing evaporation of moisture from the inner parts and resulting ultimately in spoilage of the product; (4) the fats in the meat must not be allowed to become rancid as by oxidation; (5) a sufficient quantity of heat must be supplied to evaporate the large percentage of water present. Briefly, the conditions to be met include a suitable temperature, absence of air, and the addition of the needed calories of heat energy.

The solution of the problem involves the use of a suitable vacuum dryer, heating the meat or other food product cut in pieces of suitable size to a temperature below that at which cooking or appreciable changes in the meat take place; continuously maintaining a degree of vacuum such that the vapor pressure of water at the temperature employed is greater than the pressure within the vacuum dryer, thus causing boiling and evaporation of the water from the inner parts of the meat as well as from the surface, and introducing a sufficient quantity of heat to enable the large amount of water to be evaporated by taking up the requisite number of calories of heat energy to overcome the latent heat of vaporization of water.

The vacuum shelf dryer to be used permits hot water or low-pressure steam to circulate through the shelves. The material to be dried is placed on galvanized iron wire gauze trays, which are readily run into the dryer onto the shelves and which give metallic conduction from the heating surface to the substance to be dried. At the same time, the gauze trays permit of evaporation of the water downwards as well as upwards. Such trays can also be readily cleaned.

A large variety of foodstuffs have been dehydrated by the vacuum method. A number of these are shown. In none has the material undergone a preliminary treatment such as heating or subjecting to sulfur dioxide vapors before dehydration.

The main point of the process is the proper regulation of temperature and vacuum to the specific substance being dehydrated. The details of the process were described in the November issue of the *Journal of Industrial and Engineering Chemistry.*

To return to the table in which the different processes were compared, the safety factor, as in all food preservation methods which are in use, is satisfactory for both dehydration methods. With regard to the question of food hormones, work is in progress with the products obtained by the two methods. From the results at present available it would appear that the foods which have been treated by the air process method result in products in which the food hormones are affected to various extents, and that the vacuum method gives more favorable results. This is not unexpected, as in the former method the presence of heated air might be expected to bring about more changes in the chamical and biological properties of the materials than would be the case in the latter method.

As far as transportation is concerned, both processes are satisfactory. It is this feature which characterizes dehydrated foods. It will be unnecessary to quote figures showing the great saving in weight and space. It is desirable, however, to

emphasize this point in connection with dehydrated meat and fish.

The palatability is satisfactory for vegetables and fruits dried by the air process, but not for meats and fish. On the other hand, it is satisfactory for all products which have been obtained by the vacuum process.

With regard to economic considerations the rapid expansion of the air drying process speaks for itself. Production costs are available, but their presentation would lead too far here. Extensive advertising campaigns to bring the products to the attention of the general public have also been planned. Lacking the experience of a large plant operating over a considerable period of time, it may be said that production costs for the vacuum process appear satisfactory. In certain respects, such as economy of operation, it possesses an advantage over the air process, in other respects, such as initial cost of installation, it is at a disadvantage. However, in connection with this last point it may be stated that the interest on plant investment in any dehydration process is a very minor part of the cost of operation.

The vacuum process also offers new possibilities especially with meat and fish. It may be of interest to quote an experience with dehydrated meat. Fifteen hundred pounds of beef were dehydrated by the vacuum method, packed in wood boxes and shipped to Asia Minor for the American Committee for Relief in the Near East. The following extract is taken from a letter from the chief of the Medical Expedition of the Committee:

"I took the dehydrated beef all over Asia Minor in hot and cold, wet and dry climatic conditions, and the beef seemed to keep perfectly well. Then we tried cooking it in various ways and found it very satisfactory. We made it up into stews with vegetables, or into hash with potatoes. Most of the beef which you sent later went into the Caucasus and has helped to relieve the hunger and need in that region."

In considering food preservation methods in general, it may be stated that such methods will come into use more and more both for the reasons given earlier in this paper and also to eliminate the large amount of waste due to spoilage. Government estimates are that over fifty per cent of the fruits and vegetables grown in this country never reach the consumer as a result of poor transportation facilities, irregularities in marketing or other causes. At the same time greatly because of recent work on such questions as food hormones, the tendency is to use fresh foods wherever possible. The newer dehydration processes approach more nearly the requisite standards of fresh foods than do the older methods of preservation. The whole question is in a state of development. Dehydration, greatly because of the transportation factors, offers the most promising outlook for the future. Air dehydration marks a great advance over the older methods of food preservation, and it would appear now that vacuum dehydration possesses in its turn certain advantages over air dehydration. The vacuum process in its present form cannot in any sense be considered final, but further developments will come and unquestionably in the near future.

*An address presented at the December meeting of the New York Section of the American Chemical Society.

Mounting Value of Farm Products in 1919

IN consequence of greater production as well as price, the total value of farm products of this country in 1919 rose to the record amount of $24,982,000,000, as estimated at farmers' prices by the Bureau of Crop Estimates, United States Department of Agriculture. On account of many and important duplications this total can have significance only as an index number. Reckoning from 1909 as 100, the total for 1912 stood at 109, for 1913 at 115, for 1914 at 116 (the first war year), for 1915 at 126, for 1916 at 157, for 1917 at 226 (first war year for the United States), for 1918 at 263, and for 1919 at 292, or nearly three times the amount of 1909.

In the total value of the crops of 1919, $16,025,000,000 are items and groups of items that each exceed a billion dollars. By far the most valuable single crop is corn, the computed value of which, at $1.35 a bushel, is $3,934,000,000, or more than the farm value of all crops before 1904. No dream of expectation could have foreseen either the 2,917,450,000 bushels of this crop or their value when Whittier wrote his injunction to "heap high the golden corn; no richer gift has autumn poured from out her lavish horn."

The cotton crop, notwithstanding a low production in quantity and export difficulties, is next, although far below corn, in value, with $1,969,000,000 for lint and $2,325,000,000 for lint and seed. Not so very many years ago cotton had third or fourth place in order of value, but its recently acquired second place seems to be permanent.

Except among those who are familiar with the great facts of agriculture, the hay crop is hardly thought of as worthy of any particular attention, yet this crop has been second to fourth in value for many years. Third in order in 1919, the 109,000,000 tons of this crop had a farm value of $2,129,000,000, and if to this is added the value of the pasturage the total may be as much as three to three and a half billion dollars, high enough to be in company with corn.

Wheat, according to the estimate, had an average farm price of 11 cents per bushel in 1919 above the price of 1918, or $2.15 per bushel. With a value of $2,024,000,000, it is as low as the fourth crop in order, notwithstanding its spectacular proportions of 941,000,000 bushels.

All cereals combined, the grand total value is $7,474,000,000, or more than the annual value of all farm crops before 1916. The vegetable total, including potatoes and sweet potatoes, is $1,479,000,000; the fruit total, $730,000,000; the seeds total (to follow the census grouping), $261,000,000, including beans and peanuts; the sugar-producing crops, $147,000,000.

In the total farm value of animal products, $8,957,000,000, the chief group of items is the value of animals sold and slaughtered, which is placed at $4,634,000,000. Next below this group is that of dairy products, whose value of $2,789,000,000 is reckoned at the farm and in the form in which they left the farm. Poultry products follow with $1,359,000,000, and wool with $160,000,000.

Make Producers of the "Useless Members," Says Secretary Meredith

Business Men Called Upon to Get Rid of Employees Who Add to Cost of Distributing What the Farmer Produces

IN ANSWERING questions of means for reducing the high cost of living, Edwin T. Meredith, the newly installed Secretary of Agriculture, said that useless employees, no matter in what line they may be engaged, must be released from nonproductive work and given an opportunity to become producers upon the farm or in the factory. If this is done and if jobbers and retailers recognize the harm that must ultimately come from profiteering on the farmer and content themselves with a reasonable profit, he said, the question of the high cost of living will largely solve itself to the permanent good of all. But unless the whole country—all business and all labor—does recognize this as a common problem and do the things necessary to solve it, he continued, "less and less will there be of farm produce to divide among the whole people and higher and higher will go the price of that which is produced."

"I am surprised," said Mr. Meredith, "that I should have received the number of messages I have, particularly from daily papers, asking what plans I, as Secretary of Agriculture, have to reduce the high cost of living, indicating that the general feeling is that this is essentially an agricultural problem. It is, of course, related to agriculture, but no more than to many other lines of activity, and I am tempted to believe that the solution of the problem lies more in the hands of those interested in distribution and non-productive enterprises than in the hands of the farmers of the country.

Give Farmer Satisfactory Conditions

"The farmers must certainly produce. They have produced and will produce—that is their business. They are on a piece measure basis, so given satisfactory conditions they will do their part, as the farmers of America have in every situation or crisis that has faced the country. But this question of 'satisfactory conditions' is a big one. It is not a satisfactory condition for the farmer to receive reduced prices for his pork, wheat, hides, while the prices of his machinery, lumber and shoes are raised. It does not conduce to a pleasant frame of mind on the part of the farmer or spur him to greater production to be obliged to sell his products for half or less than he later sees them sold for at retail. The dairy farmers of the country wonder if they are treated fairly when they receive thirty-five to forty cents for butter and see it retail at eighty-five cents. The poultry men wonder why, when they receive from forty cents to fifty cents for eggs, they retail as high as a dollar per dozen. The hog growers wonder if they are not in a 'hazardous' business when they buy fencing and all other supplies at greatly increased prices, and then see their produce fall fifty per cent and sold by them at an actual loss, in answer to a demand on the part of the rest of the population for a reduced cost of living.

"The farmers of America," the new Secretary went on, "are willing to assume their part of the responsibilities as American citizens in meeting any problem threatening the welfare and stability of our country, but this high cost of living problem is a mutual one, and they ask that it be approached by all the people as a common problem. They ask that those engaged in distribution eliminate the lost motion and not put so great a burden upon production as there is upon it today. In other words, they ask that there be an adequate number of producers of wealth, and this includes property and food of all kinds, and only such number of distributors as is necessary to perform the services required. They ask that the banks, railroads, wholesale houses, retail establishments, factories, all of which are vitally necessary to the farmer and recognized by him as such, be speeded up along with him, that the work now done by three men may be done, if possible, by two, and the burden of transportation and distribution be thereby lightened. If the factory executive will speed up his plant that there may be two days' labor in the supplies, machinery, or what not, that the farmer buys, rather than three days' labor, the article will cost the farmer that much less, his profits be increased and his production stimulated, more men stay on the farm, more men go to the farm.

Put Useless Employees at Productive Work

"Business men must look to the operation of their establishments, no matter in what line they may be engaged, and see that no useless employe is retained to add to the cost of distributing what the farmer now produces. Useless employees must be released from non-productive work they they may go into productive work and add to the sum total that may be distributed among all.

"Let us enjoy in America as highly developed a system of distribution, and in this I include all the professions, doctors, lawyers, teachers, as well as retailers, transportation, etc., as we now have, but let us cut out the useless member, the surplus one here and there, and give him an opportunity to become a producer upon the farm, or in the factory. Let us have six-tenths of our people in production and four-tenths in distribution, that there may be six-tenths of what a man can produce each day for each of us, rather than have four-tenths in production and six-tenths in distribution, which gives us only four-tenths of what a man can produce each day for each of us. To do this conditions in production must be attractive, farming must be remunerative and offer to a young man who engages in it an opportunity equal to that offered him should he go into a bank, railroad, wholesale or retail establishment.

Labor Must Meet Farmer Half Way

"The farmer asks that the laborers in the mines, the factory and the mills, who are also real producers along with the farmers, make an effort comparable to his to see there is just as little labor expense as possible in each article turned out by their hands, thereby helping the farmers of America, who in turn will help the laborer. This is not inconsistent with the views and desires of the loyal, intelligent labor-

ing men, who recognize the mutual advantage to all in an honest day's work for an honest day's pay. Given this and the manufacturers, jobbers and retailers taking a reasonable profit and recognizing the harm that must ultimately come from profiteering upon the farmer, the question of the high cost of living will largely solve itself to the permanent good of all concerned.

"On the other hand, if the whole country, all business and all labor, does not recognize this as a common problem," the Secretary continued, "and do those things which give the farmer a fair compensation for his efforts, do those things which make farming remunerative, pleasant and attractive as other lines of endeavor, the conditions will not improve. On the contrary, more and more will the young men leave the farms, more and more will the older men become discouraged, and less and less will there be of farm produce to divide among the whole people for their sustenance, and higher and higher will go the price of that which is produced.

All Must Strive for Cheaper Distribution

"Attention must be given by public-spirited citizens to the methods which tend to quicken and cheapen distribution of farm products, such as better terminal facilities, easier transfers, inland water transportation, back hauling and roundabout routes eliminated. We must all interest ourselves in helping solve the problems of the farmer and furnish him facilities that will help him in his business. While such facilities must be furnished, we find on the contrary there is now being made an assault on the Farm Loan Bank, which gives the farmer money on favorable terms, without commissions, without renewal charges, finances him to carry on the fundamental activity of our country, gives him long time that he may plan ahead where necessary. The assault is made by selfish interests, and their success would, in my judgment, be a blow to agriculture in America and result in ultimate harm to all interests. But how many business men in America have recognized this as their problem, or interested themselves in the farmer's behalf? Very few, and yet they could well afford, in fact must, interest themselves in this and other problems affecting the farmer, or they will feel the reaction.

"The farmers of America are willing and anxious to meet the problem of reducing the cost of living as a mutual one. They seek the coöperation, support and sympathy of the business world, and receiving it they will do their part and more. All of us working to this end are strengthening and making permanent agriculture, the very foundation of our whole structure, and therefore doing well for our country as a whole. Every person, no matter in what walk of life he may be engaged, should have a sympathetic, helpful interest in agriculture, be helpful to the farmer, and see he gets a fair, square deal in all matters. Surely, such an attitude is an expression of the highest type of patriotism in peace."

Beech-Nut Company and Colver

Following is from an address made by Hon. W. B. Colver of the Federal Trade Commission, at a meeting of the American Specialty Manufacturers Association, held at Atlantic City, N. J.

"One of your members, the Beech-Nut Packing Company, has undertaken, in the general interest, to contest the question of resale price maintenance. The contest is being carried on expeditiously and in a generous and friendly spirit by the Beech-Nut Packing Company, and issue in the same spirit. Neither party seeks so much to win as to secure a final and definite dictum of the court which shall clear up, so far as possible, the mooted question.

"It is such contests as these, undertaken in such fair and impersonal spirit as this has been, as will clear away, bit by bit, the twilight zones in the business world.

"You can't issue a complaint unless you issue it against somebody, and there comes the hardship. Now, we could either select some small timid, little fellow, and then go dealing concern that will play the game and play it straight; whose ahead with a great show and hullabaloo, and make a ruling against him and the practice, and slap the law down hard and fast. Or, we can take a big, rich, square-dealing, fair-the Commission seeks to meet the business name and business fame is so good that the issuance of a complaint against it won't hurt it; it is impregnable to slander.

"Selecting a concern like that assures us of two things; assures us first that we are not putting a hardship on something that we yet don't know about, on somebody who cannot afford it. And in the second place, that the concern cited will be so strong and its counsel will be so able, that every last shred of argument, of proof, of testimony on the other side, will be fully presented before us.

"Now, that may be wrong, or it may be right, but we feel that that tremendous power, and not only power, gentlemen, but responsibility — a responsibility that bears very heavily on the men who are trying to execute the law—that that great power, that tremendous responsibility ought not to be used in gunning for sparrows. We ought never to shoot that gun at any trivial matter, and we try only to find representative concerns—big concerns. It may be for that reason that we have in some quarters a feeling, and it has been said that we object to the size or we like to fight the big fellow. There is something in us that doesn't like mere size. I have told you the truth—the reason why we like the big man. The reason we ask the big man to come in and defend is because we want to know all that can be told on that side of the case, and the big man can afford to have a learned counsel that can explain it to us. We don't pick him out because he is big and because we want to hurt him, but because he is big and keeps us from hurting the little fellow. Now that is another view of picking people for mere size, and it is true.

"It only remained then, for us to find somebody who was big-hearted enough and big-pursed enough and had learned counsel to begin with us, and go through the long and tiresome case. And when we get to the Supreme Court, how about this thing? Nobody is going to win a victory or get licked. We just want to know what is the law, and then we will all go back to bay, and the spirit in which the contest has been carried forward has been this spirit.

"It is pleasant, it is delightful, it is altogether a bright spot in the day whenever we have to pick up, in the routine, this particular matter. Because in it we are always sure we will never find sharp practice or pettiness, or the withholding of all the facts, but we know the cards are on the table, and that case at least is going forward in an orderly way—without passion, without prejudice, and nobody is trying to win it except we are all seeking light, and we are going to the only place where the manufacturer can get it, and that is the Supreme Court."

Important Steps Taken in Food Legislation

THE chief steps in State food legislation during the past year, says Dr. Carl L. Alsberg, chief of the Bureau of Chemistry, United States Department of Agriculture, were State laws requiring the candling of eggs near the source of production, bringing about more effective control of the soft-drink industry and insuring correct labeling as to ingredients of stock feed.

Egg candling legislation resulted largely from work on conservation of eggs during the war, the outcome of recommendations made by the Food Research Laboratory, Department of Agriculture, to the Food Administration. Candling of eggs as near as possible to the source of production was enforced during the war through coöperation of the Food Administration, the Department of Agriculture and State food officials. The results were so gratifying, both in improved quality of eggs on the market and prevention of loss from spoilage, that many States have taken it up as a permanent feature of their food-control work. Eggs that are cracked show loss of bloom or evidence of having been wet, evidence of incipient spoilage or other defects are good if used at once, but will not stand transportation. Candling at the source separates them out for local consumption, preventing loss of food and saving transportation and storage charges.

Since it became apparent that prohibition was to become an established fact, the market has been flooded with a great variety of soft-drink concoctions. Some of them have no merit and a few may be harmful. Any mixture sold as a soft drink, Dr. Alsberg points out, may become harmful to health if it is not put up and handled in a sanitary manner. Some of the bills introduced in State legislatures on this subject provide, as a means of sanitary control, a State license system for soft drink manufacturers and bottlers. Some such provision, he says, is necessary for effective control of this important industry.

The high cost of feeding stuffs has increased the temptation for dishonest dealers to substitute cheaper substances of little or no feeding value. In many such cases claims of high feeding value are made on the labels. Federal and State food officials are coöperating to correct these abuses so far as is possible under existing law, but additional legislation, both Federal and State, is necessary to full control of traffic in adulterated and misbranded commercial feeds. Proposals have been made in several States to confer authority to fix standards of classification for the various grades, to require a statement on the label or invoice of the kinds of ingredients used and percentage by weight of those that have little feeding value, and to prohibit misbranding and adulteration. These new laws, Dr. Alsberg says, will aid materially in the States where they are applicable.

The Stephens Bill and Price Maintenance

THERE is pending before Congress one piece of proposed legislation of very great import to American manufacturers; more particularly to those who are interested in the subject of price maintenance, and in the "Colgate Plan" of refusing to sell to retailers who persist in price cutting. This legislation is known as the Stephens Bill, and is, in effect, an amendment to the Federal Trade Commission Act.

The decision of the United States Supreme Court in the now famous Colgate case established the fact that the so-called "Colgate Plan" was not in violation of the Sherman Anti-Trust Law. The Federal Trade Commission, in its action against the Beechnut Packing Company case, has taken the ground that the same practice of refusing to sell the price cutters is in violation of the law establishing that commission, in that it is an "unfair method of competition."

The legislation the commission now urges in the Stephens Bill would legalize price fixing but place it under the supervision of the commission. At a recent hearing upon the measure Hon. Victor Murdock, speaking for the commission of which he is a member, urged that either this bill should be enacted or that Congress should pass another law specifically making all price protection illegal and prohibiting all manufacturers from refusing to sell their product to those retailers who, in turn, refuse to maintain a stipulated price.

In order that manufacturers generally may understand the exact effect upon their business of this Stephens Bill, if passed, an opinion has been sought from Colgate & Company, who were the first to establish the legal rights of manufacturers under the law as it now stands. Speaking for the company, Mr. Russell Colgate, its secretary, said:

"The Stephens Bill provides that manufacturers may make contracts with dealers by which the dealers agree to charge stipulated resale prices. They cannot do this as the law now stands. But these contracts are to be subject to the supervision of the Federal Trade Commission. This body is given authority, upon complaint, to investigate the fairness of the resale prices stipulated. If this measure is passed in its present form, it will mean that there will then be two possible methods of protecting prices. First, the method of refusing to sell to price cutters, the legality of which was upheld in the decision of the United States Supreme Court in the Colgate case; and second, the method of maintaining prices by contract. There are said to be concerns who are unable for one reason or another to avail themselves of the first of these methods. If so, the legalizing of the second method will open that, as an alternative, to those

who cannot use the first. The provision that the contracts and the stipulated prices shall be subject to the supervision of the Federal Trade Commission seems to us unnecessary. For, unless the manufacturer possesses a monopoly he cannot name unduly . . . high resale prices. Competition will compel him to make his resale prices reasonable.

"The Stephens Bill recognizes that price cutting is or may be an evil. The recognition of this evil is almost as important a feature of the bill as is the remedy provided. It is to be hoped that the time will come when indiscriminate selling below cost, or even without a reasonable profit, may be recognized as an unfair and unlawful method of competition, whether the manufacturer has any price contract with the dealer or not. The passage of the Stephens Bill will be a step in that direction."

Asked what the effect of the Stephens Bill, if passed, would be upon the decision in the Colgate case and upon the "Colgate Plan," Mr. Colgate added:

"It will not affect either. As I have explained, that decision merely upheld the legality of the 'Colgate Plan' of protecting prices by refusing to sell to price cutters. The Stephens Bill does not affect this plan in any way, but legalizes an alternative method of protecting prices by contract."

Hebe Company "Goes the Limit"

ONE of the best indications of the progress of food manufacturers along the road to honesty and fair dealing is furnished by the frankness with which many of these are placing the inside facts about their products and their business methods before officials who are concerned with food control and before the public.

One of the best and most recent examples of "going the limit" in the effort to show food officials and the public all of the truth regarding the production and sale of their product is that of the Hebe Company, producers of the compound Hebe, regarding the purposes and marketing of which there has been some misunderstanding.

About a year ago a representative of The American Food Journal made a very thorough investigation of Hebe and the methods by which it was advertised and marketed. As a result of what was found out during this investigation this publication openly commended The Hebe Company for what it was trying to do and the methods being employed.

During the last month The Hebe Company has prepared and sent out a portfolio entitled "Tell-Tale Letters," in which is shown reproductions of letters to all distributors, urging them to sell Hebe for just what it is — a compound of evaporated skimmed milk and vegetable fat, to be used as an auxiliary to the family milk supply for cooking, baking and with hot beverages — and not as a substitute or cheaper form of condensed or evaporated whole milk. There are shown also, examples of letters sent to grocerymen who list Hebe incorrectly in their local advertisements, urging that Hebe be properly advertised and sold.

Included in this portfolio are reproductions of actual letters written to consumers of Hebe who have shown by their letters to The Hebe Company that they are not fully acquainted with the nature and purpose of the product. These show that this company is trying to show the consuming public understand the exact nature of its product and the specific purposes for which it is created, and not seeking to take advantage of the ignorance of the consumer or the willingness on the part of some grocerymen to sell the product for something that it is not.

Copies of various advertisements and booklets as well as the label are also shown in the portfolio.

This portfolio is being sent to food officials, heads of agricultural colleges, editors and publishers of farm and dairy papers and other persons who are directly concerned with the dairying industry.

As a further evidence of how far this company is willing to go to show the sincerity of its purpose, a change in the label is also being announced. Their former label was approved by the U. S. Department of Agriculture and most of the State Departments, but owing to the fact that there has been some criticism of the product because some dealers failed to sell it for just what it is, the words "Do not use in place of milk for infants," have been voluntarily added to the label by the company.

It was because of such evidence as this that The American Food Journal dared to support the Hebe cause, and it is a matter worthy of note by other food manufacturers and by food officials that this evidence is now being voluntarily given to those who are most interested in getting it.

Unfair Practices

The Federal Trade Commission has defined, as within the jurisdiction of the law relating to unfair practices, the following:

Selling below cost providing other goods are purchased upon which a profit is made.

Price cutting in certain localities.

Selling direct to consumers to compel retailers to handle exclusive brands.

Price fixing through contract and combinations.

False and misleading advertising and misbranding.

Public black lists.

Inducing and compelling manufacturers not to recognize certain dealers as entitled to buy at jobber's prices.

Dividing territory and limiting selling area.

Discrimination in price between purchasers or localities.

Failure to fulfill contracts because of advance in the market price and the surreptitious marketing of such products through other channels at a higher price.

Special rebates for selling manufacturer's goods exclusively.

Ohio's Definition of Pasteurized Milk

Owing to the fact that so-called pasteurized milk such as is handled in a commercial way has not been subject to any standardized method of preparation, thus causing many unsatisfactory results in milk thus prepared by the time it reaches the consumer, also on account of lack of standard of preparation, we are hereby giving legal definition to the term "pasteurized milk," as may be used in this state on and after February 1st, 1920, said definition conforming to that established by the United States Department of Agriculture, issued April 17th, 1919.

"Pasteurized milk is milk that has been subjected to a temperature not lower than 145 degrees Fahrenheit for not less than thirty minutes. Unless it is bottled hot, it is promptly to 50 degrees Fahrenheit or lower."

What Is the Consumer's Responsibility

By William B. Colver

Extracts From an Address Before the National Consumers League

FIRST and foremost, the consumer's responsibility is to pay the bills whatever they may be and however they may be made up.

But I think the consumer's further and real responsibility is the scrutiny and analysis of bills and prices to see how they are made up and why they are made up as they are and what items are paid for.

Naturally, you are primarily interested today in the ever-present problem of the high cost of living. In considering this problem, as in considering every other, if we take it on the surface it seems a hopeless and complicated mess, but viewed from the standpoint of a "ten-year program," it can be analyzed as to its fundamentals, and when so analyzed any problem, however complex and difficult, tends to become somewhat clear and rather simple.

The pursuit of the isolated profiteer, the crucifixion of a retailer here and there, or the consideration of a single group of people, offers no real hope for a permanent solution of our difficulties.

The Relation of European Conditions to the American Price Structure

To understand our own troubles and our own problems, we must take heed of the problems and troubles of the rest of the world, for whether we will it or no, the United States can no longer occupy a position of isolation or of provincialism. We are a part of the scheme of world affairs and because of that we must play our part intelligently. We have been considering European affairs rather sentimentally. They should be considered practically.

As matters stand now, our export trade is seriously threatened by adverse rates of foreign exchange. The curtailment of export means the curtailment of production here. The curtailment of production here means involuntary idleness and while over-production might mean perhaps a temporary lowering of the price structure, it would also mean a reduction of the payrolls which provide the needed money with which to buy necessaries.

That tends towards a catastrophe, it tends towards panic, it tends towards distress.

The application of "direct action" or dynamite or violence to a readjustment of the cost of living is just as destructive, just as ill advised and just as futile, so far as permanent betterment is concerned, as are political revolutions.

At the end of the Civil War the United States found itself in much the same position as Europe finds itself today. Its industries were disorganized. Its man power was depleted. Its credit was overstrained. It lay bleeding and prostrate.

Following the Civil War, Europeans became very great investors in our great transportation and industrial enterprises so that by 1914 more than ten billions of dollars of gilt-edged American securities were in the strong boxes of European investors.

Since 1914 we have become the creditor instead of the debtor nation. After the Civil War we were the debtor nation and Europe was our creditor. Europe furnished the money with which to rebuild America and it was an exceedingly profitable transaction for Europe, but it was also profitable for the United States.

Now the shoe is on the other foot and if we would take a page from the successful experience of the people of England, Holland, Belgium and Germany, and, to a lesser degree, of France, Italy and Austria, we would begin in 1920 to do what they did in 1865.

The flow of our goods across the ocean is impeded by weakened foreign exchanges. Since the war began we have loaned to our allies and to friendly neutral countries more than ten billions of dollars while buying back on equal sum of our own securities held abroad.

To continue to extend, through taxation gathered from all of us, further great loans from the United States Treasury to the governments of stricken Europe, will only result in still further piling up the mountain of debt and add to the continual interest charge which must be a crushing burden upon foreign exchange.

Meantime, 1919 has been a year which we and our children will look back upon with shame. It has been a year of reckless extravagance and personal expenditures quite aside from the high prices which we have been compelled to pay for the necessaries of life. Indeed our own reckless extravagance has been an exceedingly important factor in the creation of the false price structure in our cost of living.

Nineteen hundred and nineteen was a year of insane speculation. Hundreds and hundreds of millions of dollars have been squandered in speculative ventures commonly called blue sky stocks and in stock gambling.

When we talk of blue sky operations let us not consider them as being limited to the capitalized mendacity of promoters of mines and oil companies. New York must share the responsibility.

Legitimate American business, in need of additional capital for necessary and useful extensions, has found itself in competition with the blue sky flotations and with straight out gambling.

The *Wall Street Journal* tells us that not long ago in New York a substantial going business concern, needing money for permanent betterments, got its money on these terms:

It issued its securities which were taken by underwriters at 30; the underwriters passed them on to a syndicate of sub-underwriters at 53, a profit of 75%. The sub-underwriters passed them on to brokers at 82, a profit of 54%, and the brokers passed them on to the public, to you and to me, and the man on the street, at par, a profit to the broker of 22%.

And, when the investor eschewed blue sky securities, and, reading the prospectus of a going concern in legitimate need of funds for expansion, chose those securities he did not know that out of his hundred dollars only 30, in fact, reached the concern in which he thought he was investing, and seventy of his dollars never became productive, invested capital.

Transactions like that are not going to lower the cost of living.

The war has put hundreds of millions—billions of dollars into the pockets of our people. This fund is the last great reservoir of money and credit on earth and we have been wasting it like a nation of Coal Oil Johnnies.

This fund should be devoted to the increase in production of neces-

sary and useful things in this country; of needed goods for export (especially of productive things instead of foodstuffs), and billions of dollars should be devoted to investment in the gilt-edge transportation and industrial securities of prostrate Europe.

With the proceeds of the sales of their securities Europe would be placed in possession of a supply of credit and funds with which to rebuild her productive operations, and a solvent Europe means a solvent America just as surely as an insolvent Europe means an insolvent America.

Measures have been proposed whereby the Government of the United States should extend more and more credit to Europe; whereby Government aid should be given to exporters whose European customers have neither cash nor sound credit, and whereby syndicates of American bankers and manufacturers should be formed to extend long-time credits to be used in aid of the export trade. All these things except further Government loans, will be useful, but they will only be a drop in the bucket. The absorption of billions of dollars of dividend-paying foreign securities by American investors is far the better method for restoring a balance and bringing about a condition of solvency to the world.

A Million Dollar a Day Gold Leak

During the past few months our gold reserve has been trickling away by shipments of gold to South and Central America and to the Orient.

Every ounce of gold that goes away means a contraction of our own credits and of our own ability to go ahead. We should not be paying in gold for goods imported from South and Central America and the Orient. We should be paying for them in our own goods and thus make two profits on the transaction.

South and Central America and the Orient are beginning to take our gold at the rate of a million dollars a day and to spend this gold in Europe for the same commodities which we make and should export, but which can be sold by Europe because of the depreciated European exchange, at prices with which we cannot compete. This operation has a direct influence upon our own high cost of living.

The Excess Profits Tax

The excess profits tax is another cornerstone, if not the chief of the corner, in our structure of unhealthy prices. The excess profits tax was never proposed as a revenue measure and is not necessary as a revenue measure. It was proposed only as a corrective to government price fixing. When the Government was fixing the price on various commodities it found that some manufacturing concerns or some mines could produce at a very low cost, while others produced at a very high cost. A known and definite amount of each commodity was necessary for the winning of the war. The policy was adopted of fixing a price which would be high enough to bring out the last needed pound or the last needed bushel or the last needed yard of each commodity. This resulted, of course, in abnormal profits to the low-cost producers and the device of the excess profits tax was adopted to bring back into the Treasury some part of these inflated prices. Even as a corrective, it did not work. On the contrary, it encouraged extravagance of operation and carelessness in business management. Now the Government is no longer fixing prices and the only excuse which ever existed, if one did exist, for the excess profits tax, has disappeared.

In everything that you buy there are from one to fifty excess profits taxes. Each one who pays an excess profits tax adds it to his selling price and passes it on. The consumer finally pays the total bill.

Work and Save

The consumers' further responsibility at this time is to take a sober and sane thought to the end that the consumers themselves may end the debauch of extravagence, wastefulness and speculation and return to saner ways and to the end that unemployment may be avoided by the production in as large a quantity as possible of all necessary and useful things both for consumption at home and for export. It lies in the saving of individual surpluses for investment, not in wild-cat ventures, or in stock gambling, but in the development of useful enterprises at home and in the purchase of the sound and productive securities of the old world. It lies in the elimination of futile and obsolete methods of taxation and the substitution of simple taxes which can be seen. If the taxpayer can see the tax-dollar that he is paying, he will insist upon and secure that minimum in government expenditures which must go hand in hand with a return to sane living and expenditure on the part of the individual.

A cloud upon the horizon is the tendency to great issues of State and Municipal bonds. This would mean the absorption of a great volume of money and credit to be used in public improvements not immediately needed and not sufficiently productive when completed.

The consumer's responsibility at this moment seems to me to be the firm but gentle application of an ice cap to the national head and thereby a reduction of a temperature which has run so high that it has resulted in a delirium of spending and a hysteria of prices.

A. Hugh Bryan

The many friends of this well-known food chemist will be shocked to learn of his death at his home at 71 Myrtle Ave., Montclair, N. J., at 2:30 a. m. on January 19th, 1919. Mr. Bryan was taken ill on January 11th with influenza, which was followed by a complication of acute Bright's disease and pneumonia.

Mr. Bryan was born in Indianapolis on July 27, 1874. After graduating from the public and high schools of his native city he entered Purdue University, from which he received the decrees of B. S. (1898), A. C. (1899), and M. S. (1900). Mr. Bryan's first position was that of assistant chemist at the Indiana Agricultural Experiment Station, where he remained until 1900, when he became chemist for the American Beet Sugar Company of Colorado. In 1907 he resigned his position with the American Beet Sugar Company to join the force of the United States Bureau of Chemistry as a sugar chemist. He was made chief of the sugar laboratory of the Bureau of Chemistry in 1909, which position he held until 1913, when he left to accept his last position as supervising chemist for Arbuckle Bros. of New York City.

A Vegetarian Samson

At fifteen, Dean Diffield Cutting of Seattle, stands six feet, weighs 185 pounds, is a giant in strength and has never eaten meat. All day long he handles a 75-pound drill at the shipyard without particular effort.

His strength does not come from animal food, for he breakfasts on a quart of cool water, lunches on three peanut sandwiches, two or three bananas and a pint of milk, and dines on beans without pork, mashed white or sweet potatoes and other vegetables. When a child he saw a picture of a dog retrieving a fowl, and has never cared for meat since.

Botulinus Poison Never is Sound Food

Food Officials Warn Consumers to Watch for Signs of Spoilage in Food

BOTULINUS poisoning which recently killed six in one family in New York, is caused by eating spoiled food infected with the bacillus botulinus, say the officials of the Bureau of Chemistry, United States Department of Agriculture, who have investigated this and other poisoning cases in connection with the enforcement of the Food and Drugs Act. In the New York case death was caused by botulinus poison in ripe olives. The olives remaining in the bottle in this case had an offensive odor. The same condition was found in the food in other cases investigated by the department. All spoiled food does not contain the poison, but any spoiled food even though the spoilage be slight, may contain it, and for this reason, say the officials, all food showing even the slightest unnatural odor, unnatural color, swelling of the container, signs of gas, or any evidence of decomposition whatever, should be discarded.

The Department of Agriculture has used every possible effort and gone to the limit of its legal authority to remove all dangerous foods from the market by seizure under the Food and Drugs Act, say the officials. Each time when botulinus poisoning has occurred food inspectors have traced through the channels of commerce the batch from which the poisonous food came and have used all measures under the law to remove it from the market. Samples from all other brands put out by the packer have been examined. Since the law authorizes seizure in such cases only when the foods are actually found to be decomposed or to contain poisonous ingredients, since only an occasional package in millions is infected with bacillus botulinus, and since it is physically possible to open and examine but a comparatively few of the millions of cans entering interstate commerce, it is beyond the power of the authorities to protect the public completely. For this reason they emphasize the necessity for scrupulous care on the part of persons opening and serving foods to discard anything which is spoiled. In products not obviously spoiled, if there is doubt in the recognition of the odor proper to the product, thorough cooking will remove the possibility of danger from botulism. If spoilage is apparent, destruction is recommended by the specialists.

Nobody knows just how the bacillus botulinus gets into any partic-

(Continued on next page)

Facts About Figs

ASIA MINOR, where the Garden of Eden is supposed to have been located, has always been the center of the fig-growing industry. Smyrna, in Asiatic Turkey, long has been the seaport from which the best of the oriental figs were shipped. Turkish figs still are considered the best on the market, but they now have a new competitor which is running them a close race, and it is the opinion of many that the best of the California figs are equal to the oriental variety in flavor, size and appearance.

A score of years ago, possibly longer ago than that, some enterprising fruit growers of California imported a few fig trees from Smyrna. Although the California climate is ideal for fig growing, the native figs were small, tough and flat in flavor, and the fruit men had the oriental plants shipped in for the purpose of improving the native stock. The improvement of the California fig seemed a hopeless task, so the men set about raising the Smyrna variety, to which they gave the name of Calimyrna. They didn't do very well in their venture for many years, although they gradually improved the fruit.

The world war came along in 1914 and cut off the importation of oriental figs. Up to that time Calimyrna figs had been selling at a ridiculously low price, sometimes as low as $60 a ton. But the war gave the California fig growers their opportunity. They had to supply the domestic market, and they did, and today California figs are worth 30 cents a pound wholesale. They are so near like the Smyrna figs that even the experts are fooled by them at times. Louis L. Baum, of 136 West Lake street, Chicago, a fig packer and distributor for many years, says he has watched the development of the California fig for last fifteen years, and today believes it is the equal of the Asiatic variety.

The best of the California figs are thin-skinned, just as are the best of the oriental fruit; they are full of meat, as are the Smyrna figs, and the flavor of the two varieties is nearly the same.

But the California figs are by far the cleaner. Smyrna figs are shipped, none are being shipped now, but it is believed shipments will begin arriving in this country in September, in cloth bags, and it is easy for these figs to pick up additional dirt and germs to add to that already accumulated in Turkey.

California figs are shipped in boxes containing fifty pounds, and are comparatively free from dirt.

There are figs grown in Florida and Texas, but they are of a different variety than the California fig, and it has been found impossible to keep them for any length of time. They are preserved, however, and in that form are very edible. Central American figs are similar to the Florida and Texas figs and are used chiefly in the preserved form.

From Greece we get an inferior grade of figs known as "string figs," because they are tied together in long strings. These are used in the manufacture of food products where a high-grade fig would be too expensive. Spanish figs are little better than those from Greece, and few are imported into this country.

The fig tree is a low, squatty tree, little more than a heavy bush. The fruit grows like the pear or plum, and as soon as it gets thoroughly ripe it splits and falls off. These split figs are considerably cheaper than the pulled figs, and are put up in large, flat boxes as layer figs.

Mr. Newcomb Advances

It is announced at the annual meeting of the Fleischmann Company that Mr. Henry R. Newcomb, executive supervisor, was elected one of the vice-presidents of the company.

The Present Situation

By H. R. Strasbaugh

THE whole country has gone awry and everything is a-wash. Does the laboring man really believe if there are less hours of labor there is more production? Does the politician really think that less hours and higher pay will increase production? Does the distributor of army and navy surplus believe that he is benefiting industry when he sells canned tomatoes at $1.30 per dozen immediately after a season when the cost of packing is $2.15 per dozen? Can hip boots be sold at $5.25 per pair if it costs $7.50 to manufacture them? Can the farmer pay $10 per day for husking corn, or the cotton grower $10 per day for picking cotton, or the lumberman $10 per day for dragging cypress logs from the swamp without decreasing production or increasing the selling price?

Will the constant nation-wide criticism of the manufacturer and business man fan or smother the flame of social unrest? Will the hurling by rapid fire guns of epitaphs such as "profiteers, robbers, tax dodgers, grabbers," etc., result in Production, still Greater Production?

The law of ages has said "what a man makes belongs to him." Individually, no class in the country will dispute this fundamental fact. In order to increase production, ambition and efficiency must be unhampered. Men of all classes are human and as individuals, believe this to be the true doctrine; at the present time, collectively, this law seems to be disputed. Men are born and not made either by law or design and seldom by influence. Hard knocks and steady blows have counted in the past and they will continue to count in the future. Anything to the contrary is camouflage.

There may be at present unrest among labor classes, but the unrest is not confined alone to the so-called laborer. The business man, the manufacturer, the bookkeeper, the clerk—they are all experiencing the atmosphere of unrest which seems to pervade all nations at the present time. The cause of all this has been war, mismanagement, extravagance, and waste, followed by the aftermath of selfishness, personal greed, and the roughhouse game of "grab everything in sight," just as though this was the wind-up of the whole thing, and as though sanity and reason would never again assert itself.

If it is required on the Pennsylvania Railroad System to work 14 men where 11 men worked before, and if, as statistics show, the results obtained have not been equal to the past, there is little reason to expect a deflation in selling price or the cost of existence. Government control and excess in increased charges do not result in reduced fares and freights to the public.

The canner has not profited by the war; his products have been commandeered at and below cost. Army and navy surpluses have been offered even prior to the 1919 packing season below the cost of government purchase, and far below the enhanced cost of 1919 production. Is this an inviting condition for capital proposing an increase of cannery product? It has been said that canned foods ranked first among the necessary products which resulted in finally winning the war. If such is the case, is there any excuse for the present depressed situation, and is it not most important that the canning fraternity use their endeavor first with the purpose of elevating the position of the industry rather than in the way of endeavor for greater production at a time when the market is below cost? The position of the industry must first be stabilized; then production, still Greater Production. If the process of pasteurization is necessary, let's go to it and then after the industry becomes at least semi-prosperous, we can then lend all our energies to increased production.

Production is desirable for two purposes: First, a livelihood to the producer; second, a product for the consumer. When our industry does not fulfill both functions, sooner or later, something is going to stop. The producer will soon seek new fields of employment and investment if liabilities are not met at the end of the year. The hampered industry will not enrich the nation. Production, Greater Production, is needed. Work, and not slothfulness, will make the nation Great, Happy and Prosperous. Every man is destined to serve some business in some capacity. Those who think themselves capable of managing all kinds of business are like the saying of old, "masters of none." The coal man can best serve us with coal; the sugar man with sugar; the canner with canned foods.

There is also another old saying, tried and true, "too many cooks spoil the broth." Was this ever more practical than at present?

In all sincerity and sanity, is it possible to expect the industry to prosper or production to be the result without combined effort and concerted action among all canners who are willing to eradicate the disease that is consuming the very vitals of the industry on which we have built our hopes and expectations of success and future welfare?

*Extract of an address by H. R. Strasbaugh of Aberdeen. Delivered at the National Canners Association convention in Cleveland.

Botulinus Poison

(Continued from page 24)

ular food. It has been found in articles put up in the home by the careful housewife and in goods packed in commercial establishments. It may be present in a few packages only of any lot. There is no method, the officials say, by which the packers or home canners can assure themselves by casual examination before canning that the product does not contain the bacillus botulinus.

If the food were in all cases properly sterilized and perfectly sealed the development of the poison would be impossible, but no method of preserving food has yet been found, the specialists say, that eliminates the occasional spoiled package. Failure to sterilize may not become apparent for weeks or even months after the canning of the article. If signs of spoilage have appeared when the can is opened, it is clear warning that the product is no longer edible. There is no greater probability of botulinus poisoning in olives than in many other food products either commercial or domestic. Until this year it has been more commonly found in string beans, asparagus, and the like. It was originally found in cheese; it is present sometimes in stock food, such as moldy hay and other kinds of spoiled forage, but it has never been found in the department investigations in any kind of food that was not spoiled.

Medical Officer—"Have you any organic trouble?"

Recruit—"No, sir. I ain't a bit musical."—*Tit-Bits.*

The Ripe Olive Process as Used in California Factories

IN view of the widespread interest recently aroused regarding the methods of processing ripe olives in use by the California packers of this fruit, and because of the many misleading statements made concerning this process, the following description of the ripe olive process as furnished to Dr. M. J. Rosenau of the Harvard Medical School by Frank Simonds, manager of the Los Angeles Olive Growers' Association, is given:

In the first place, the fruit is hand-picked carefully after it has ripened on the trees, care being taken to do so prior to the stage where the fruit had reached an overripe condition. The fruit is then transported to the packing plant and put through machines designed to separate it into the different grades as to sizes.

The next step in the handling of the fruit is to place it in vats which are generally made of cement; there are some packers that use vats made out of wood. The fruit is then submerged in clear plain water for the purpose of washing it and some of the packers allow it to remain in water, changing the solution two or three times a week to prevent its becoming sour, for a period of two or three weeks, in order to neutralize the skin of the fruit so it will accept the action of the lye uniformly. Other packers immediately begin to process it by placing it in a solution of lye at once upon its being placed in the vats.

The next step is that of submerging the fruit in what is known as a lye solution. The first application being a solution made of 2½ ounces of Caustic Soda dissolved in each gallon of water. This solution is placed upon the fruit and allowed to remain from eight to twelve hours, depending upon the condition of the fruit and the temperature of the weather at the time. The fruit should be agitated while in this solution.

The next step is to draw the solution off the olives, and in a great many instances the fruit is exposed to the air without any solution upon it at all for a period of from eight to twelve or fourteen hours. This step usually results in a uniform coloring of the fruit, after which the second application of lye is placed over the fruit, which solution is composed of about 1¼ ounces Avoirdupois Caustic Soda to each gallon of water, and the length of time that the fruit remains in this second solution varies, from eight to twelve hours, depending upon the condition of the fruit, etc.

At this stage of the process the fruit is usually relieved of its bitter properties through the action of the lye, which makes it ready for washing in cold water a sufficient length of time to remove all traces of the taste of lye which was used in the former stages of the process. The length of time it takes to do this varies a great deal, depending upon the condition of the fruit, temperature of the weather and whether or not the water in which the fruit is placed is in action. The most modern method is to pipe compressed air in the vats and keep the water agitated, which results in the removal of the taste of the lye much more rapidly than is possible with the fruit lying in a still solution.

After the fruit has been entirely relieved of the taste of the lye it is then placed in a brine solution testing about nine or ten points upon the Salometer. After it is in the solution about twenty-four or forty-eight hours, it is then ready for the canning room.

The first step in the canning room is to place the fruit in bins in front of female operators, who pack it in cans; in doing so the instructions are that if they find any olive that is imperfect or soft from any cause whatever, it be eliminated and not put into the can; only good, firm fruit is put in the cans. After this step is taken it is then covered with brine at a temperature of 175 or 180 degrees, this brine registering about twelve points upon the Salometer. The fruit is then ready to go through the Exhaust, during which process the temperature is raised to about 185 degrees, and sealed, after which the fruit is cooked at a temperature of 224 degrees for thirty minutes in the case of the No. 12 can, or twenty minutes in the case of the quart can, and about twelve minutes in the case of the pint can. After coming out of this process the fruit is allowed to cool naturally without any method whatever used to cool it.

Relative to the above method of processing the olives from the tree to the can, there are, of course, variations in the processing plan. There is no effort being made by any of the canners so far as we know to control the temperature of the solution, allowing it to be governed by the temperature of the weather, which varies in California from 50 to 70 degrees. The Caustic Soda used is what is known as the 76 per cent and is used by the various packers in the granular and solid form, some preferring one form and some of them the other.

The method of stirring the fruit varies. In some instances the method used is that of the ordinary paddle operated by hand. The latest method, however, is of compressed air conveyed into the vats in pipes and released in that form with the air compressor continually furnishing the supply for the system. This means a constant agitation and aeration of the solution, both which seem important in order to produce the best results. The action of the solution is much more rapid where it is agitated.

On The Milk Wagon

Comparison of food purchases of the present with those of twenty years ago, show that the people of the United States are using less meat and less grain, but we have increased our consumption of dairy products, vegetables and fruits. These facts were established by checking a recent government survey with one taken two decades ago.

Food purchases of 500 families, representing different standards of American life, were carefully analyzed. Comparison with former years was made possible by the fact that the government had similar figures covering a survey made twenty years ago of 400 families.

The decrease in meat consumption amounted to 8 per cent and that of grain products 11 per cent. The amount of dairy products consumed has increased about 6 per cent. Vegetables show an increase of 4 per cent and fruit 8 per cent.

The average cost of food per man in these 500 families was found to be 46 cents a day. This, of course, represents only actual market costs and does not include costs of preparation and serving. Unfortunately, no comparison with twenty years ago is shown.

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Important Food Rulings by Federal Bureau

Boneless Fish Must Actually Be Boneless. Can't Use the Name of Olive Oil on a Label Unless it Is Substantially Present. Nut Oleomargarine Must Not Unduly Exploit Use of Word Nut. Java Tea Must Be Labelled Java.

Some manufacturers are placing on the market packages of codfish labeled as "boneless" from which only a few of the larger bones have been removed. Other similar products from which all or practically all the bones have been removed are sold under such labelings as "absolutely boneless," "strictly boneless" and "no bones." Investigation by the Federal Bureau of Chemistry has shown that a very small part, if any, of the retail trade and consuming public is familiar with the distinction, and that a practically boneless fish is expected by them whenever the word "boneless" appears on the label. The word "boneless" should be limited to the labeling of those products from which all or practically all the bones have been removed.

Inspectors of the Bureau have recently encountered shipments of edible oils labeled with some statement such as "winter-pressed cottonseed oil compounded with pure olive oil." Investigation has shown that some of these products contain only a trace of olive oil. It is the opinion of the Bureau that the use of olive oil in small quantities simply for the purpose of labeling such products as compounds and naming olive oil as an ingredient is in violation of the Food and Drugs Act, if the products come within its jurisdiction. Any ingredient mentioned on the label of a compound should be present in sufficient quantity definitely to impart its characteristics to the product. Cottonseed oil to which only a sufficient proportion of olive oil has been added to impart an olive oil flavor may properly be labeled as "cottonseed oil flavored with olive oil," or some similar term. Such a product, however, should not be labeled as a compound of cottonseed and olive oils. This principle is applicable also to the labeling of similar products made from other oils with olive oil.

The Bureau is informed that large quantities of teas grown on the Island of Java from seed producted in Ceylon and India have recently been imported into this country. These teas are similar to Ceylon and India teas, and apparently have to some extent been labeled and sold as Ceylon and India teas. The regulations for the enforcement of the Food and Drugs Act prohibit the use of a geographical name in connection with a food or drug product not manufactured or produced in the place indicated, when such name may give a false impression of the origin of the article. Teas grown in Java should not be labeled with other geographical names, regardless of their similarity to teas produced in other countries.

By Their Smell You'll Know 'Em

A rose by any other name may smell as sweet, but the new drinks listed on the card under the old names don't taste like the old drinks used to.—Hotel Monthly.

No, but we could list on the card a lot of fellows who are now drinking the new drinks under the old names who come a whole lot nearer smelling like a rose than they used to.

The Food Situation in England

The following is a letter written to THE AMERICAN FOOD JOURNAL on January 20th by Mr. U. S. Yates of Irven Bros., Ltd.: London.

Profiteering

This question has not even yet been settled to the satisfaction of the country in general, and there are enquiries going on all the time in reference to special cases and special trades, the latest of which is a threatened enquiry into the profits of the Woollen Trade.

What has been done is that small committees have been set up in various towns who are prepared to receive complaints and claims from the public with regard to retail prices charged to them by the shopkeepers. Judging from what appears in the Press, the cases brought appear to be quite insignificant and involve very small sums on retail articles, and shopkeepers are occasionally ordered to refund small sums amounting to only a few pence on articles such as meat or fish, boots, haberdashery, and so on. To the business mind the whole of this kind of enquiry is paltry, and certainly unworthy of the cost of the setting up of these committees.

With regard to the wholesale houses and manufacturers in the very largest cases such as in the manufacture of munitions of war, I believe that the Government made special arrangements with such manufacturers so that a fixed amount of profit to the manufacturer was agreed upon for the year, and any balance over and above that went back to the Government, but this class of arrangement is undoubtedly in the minority, and with the majority of manufacturers the whole country was placed under an excess profit duty law right from the start of the war, and which law is in existence at this moment; I understand it may be withdrawn and a substitute put forward in the name of a business tax on profits. The excess profit duty was a very simple affair, by which the Government levied a duty or tax varying from 40 to 80 per cent for the various years from 1914 to 1919 on all profits made by traders and manufacturers over and above an average profit, fixed on a basis of three or four years pre-war standard profits. This, of course, worked very satisfactorily to those firms who had high pre-war standard from say 1910 to 1914, but very harshly with other firms who had a low pre-war standard for similar years.

Time and space will not permit me to enlarge on this subject, but you may take it that the duty was strictly imposed and collected in most cases.

Food Trade Distribution

I can only speak with regard to the trade with which I am acquainted, viz.: the provision trade, and I can say that during the period of rationing of imported provisions the traders were divided into three classes, viz.: the importer, the wholesaler and the retailer, and it was necessary for a firm to register in one of the three classes.

Every importer was allotted a certain number of wholesalers and every wholesaler a certain number of retailers, and in special cases in addition retailers were allowed to purchase direct from the importer. Of course, these regulations were frequently altered, but the above is the basis of the whole operation of the rationing. The best that can be said of the rationing scheme in this country is that it certainly insured that rich and poor obtained the same quantity of available food, and also that the most pitiful of sights, food queues, were instantly stopped as soon as the ration cards and tickets were properly circulated. At the present time ration cards have nearly died out, and I think that butter and sugar are the only rationed goods at present.

Food Production in England

I am not really closely in touch with this organization, and can only say regarding it that I believe the farmers have been guaranteed a price for a fixed period after the termination of the war (I think a maximum of two years) for their wheat, corn, barley and oats, and this guarante has doubtless helped to increase the home production of vital cereals.

In my opinion, judging from the trend of events in this country today, I should think that this arrangement will probably be continued in the future, at any rate, until such time as ocean freights may be considerably reduced, and also the cost reduced, and largely reduced of all imported grain. I remember during the war and towards the closing stages in 1918, Mr. Lloyd George stated in one of his speeches that this country was then producing sufficient grain to feed onrselves for 40 weeks out of the 52, but I have no evidence to support that statement other than the speech itself.

With regard to fats I can speak with a little more knowledge as it is within my own information. Before the control came on the capacity for producing margarine in this country was about 1,500 tons per week, and long before the war ended that capacity encouraged by the Ministry of Food had gone up to between 8,000 and 10,000 tons per week; of course, domestic demand for margarine was enormously increased, owing to the lack of Danish, Dutch and other butters. Lard compound also came much more largely into use for baking, frying, etc., and the capacity of production in that article went up from 200 to 300 tons a week to 1,500. The two articles are now fighting in an open market for the public trade with excellent results from the public point of view, as good margarine is to be obtained even now at 1/—per lb. and the very best at 1/6d. I personally anticipate a rise very shortly, owing to the high cost of imported fats, seeds and oils, necessary for the manufacture of these articles.

(Signed) U. S. YATES.

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We have published a booklet giving the complete story of the dietetic and economic value of HEBE. It will be sent upon request without charge. Address: 2109 Consumers Bldg., Chicago.

THE HEBE COMPANY

Chicago **Seattle**

A Reader Has This to Say

With interest I read the food calorie article in your January, 1920, number. I noted that lamb has 1,100 calories per pound, plate beef 1,200, pork chops 1,200 and ham 1,500 calories per pound. Also that corn meal, wheat flour, rice macaroni, corn flakes and dried beans have 1,600 calories per pound and that rolled oats have 1,800 calories per pound.

I am of the opinion that the about average of 1,200 calories per pound for the meats, as compared to the "about average of 1,600 calories" per pound for the cereals does not show enough difference for the reason that meats are harder to digest than are cereals and for the reason that more of the food calories that the meats contain are indigestible than are those of the cereals indigestible. I suppose that the calories in foods as mentioned in that article are placed at those figures following an examination of those foods, and that that examination of foods did not consider the calories of food in each of those foods that would remain indigested. I have known farmers who would spend the time to go to a grist mill with a grist, and later spend time to go to a grist mill after the grist, and would give one-tenth (or more?) of the grist as toll, claiming that as the oats, and other grains, when fed in the whole grain, would pan through the stock whole, it paid to have the grain ground.

Somewhat in like manner, it is my opinion, that human beings do not get the food calories that are in meats into the system, but that they do get the food calories of cereals, vegetables, fruits and sugars. Therefore, the ratio of about 12 for meats to about 16 for cereals to about 17 for sweets and to about 3 for vegetables, does not tell the ratio of nourishment actually received by the human systems. I have the opinion that to change the figure of meats to 8, and leave the others as given would be better. I believe that 3⅔ pounds of potatoes will nourish a person longer than will one pound of meat. Also that one pound of rolled oats will nourish a person longer than will two pounds of plate beef or pork chops. I noticed that corn meal has 1,600 calories per pound and that corn flakes have also 1,600 calories per pound. That reminded me that a few months ago I paid 25 cents for two 8-ounce packages of corn flakes and a few days later paid 25 cents for four pounds of corn meal. I think that that shows how the public gets soaked by buying the "Much advertised" package goods, for I got, according to the calories table, 1,600 calories in the one case and 6,400 calories in the other case.

* * *

When I read the article entitled "Kidding the Hens" that tells of 35 white leghorn hens, that had only daylight for light, laying 352 eggs in 30 days, while 35 other white leghorn hens laid during the 30 days 503 eggs and had electric light a while in the morning and from 4 o'clock to 9 o'clock in the evening, I thought of the daylight saving law, that nearly all of the profiteers and slave-drivers approved of. More light gets more work out of the hens they think and so they supply more light. And likewise they think that more light gets more work out of the human workers and so the profiteer wanted the daylight saving law. "Kidding the Hens" and "Kidding the Wage Earners" are twins.

* * *

I noticed the sentence on page 38 of your December, 1919, paper, "The milk cow returns for human consumption a much larger proportion of the food value of what she eats than does the animal which is raised for slaughter." I agree every ten sheep in the U. S. should be turned into a cow. Every heifer calf born should be saved if possible, until that is done. Wild game, excepting birds, should not be protected by law. Every state legislature should repeal the laws that protect that wild game. Forty thousand elk in Yellowstone Park a few weeks ago, 5,000 that were starved out of the park, were killed at public expense. These elk have been fed hay. Better that all of them be killed and heifer calves kept instead.

THOMAS J. GORDNIER.

News from the Health Boards

Berkeley, Cal.—Following a number of cases of botulism, or meat poisoning, reported to state health officers here, the U. S. Public Health Service has detailed Surgeon J. C. Geiger to make an investigation in coöperation with the state officers.

New Orleans, La.—No cases of human plague have occurred here since December 15. Rat extermination continues vigorously, however. Ten thousand seven hundred and sixty-seven rats were killed in November and 27,404 in December. The Public Health Service is coöperating with local and state health officers.

Washington, D. C.—Over 10,000 discharged, disabled soldiers were undergoing treatment in Public Health Service hospitals, or under contract with private hospitals, during January, according to tabulated returns. The number of applicants for treatment under the War Risk Act is constantly increasing, as the men become familiar with the fact that they are entitled to free treatment.

St. Louis, Mo.—Extensive surveys are being made by the United States Public Health Service of school and home conditions of children in several sections of Missouri. It is expected to result in medical supervision of schools and the establishment of health centers where deficient children may receive medical attention.

Washington, D. C.—The United States Public Health Service is now operating 43 hospitals for the care of discharged, disabled soldiers, sailors, marines and war nurses, who are beneficiaries of the War Risk Insurance Act.

Niagara Falls, N. Y.—Tests of air in one of the factories here, conducted by officers of the U. S. Public Health Service, revealed the fact that each cubic foot of air contained more than 200,000,000 tiny particles of dust, almost as hard as diamond dust and extremely dangerous to the lungs and air passages.

Richmond, Va.—The United States Public Health Service is conducting a campaign throughout the state to improve health administration in the rural districts. The work is being financed jointly by Federal, State and local authorities.

College Course in Ice Cream Making

Two gallons of ice cream a year—that's what an average Wisconsin person consumes.

Two million six hundred thousand gallons—that is the record of the Wisconsin ice cream makers last year.

More than $1,395,000—that is the sum paid to Wisconsin dairymen for the milk and cream freezing.—University Bulletin.

Few Gifts of Nature Have Proved More Useful to Mankind Than Corn— King of American Cereals

CORN STARCH—edible, laundry, or lump, has grown to be a household necessity.

CORN OIL—most wholesome as a salad oil, emphasizing the flavor of the salad. For shortening, frying, and the myriad of uses in the kitchen. **Corn Oil** has made a distinct place in the home.

CORN SUGAR—has its place with the ice-cream manufacturer, the physician and the baker.

CORN SYRUP—a wholesome, popular priced sweet, gives the home a pure, nutritious food.

American Manufacturers' Association of Products from Corn

208 South La Salle Street **CHICAGO, ILLINOIS**

MEMBERS:

American Maize Products Co., 135 William St., New York
Clinton Sugar Refining Co., Clinton, Iowa
Corn Products Refining Co., 17 Battery Place, New York
Douglas Co., Cedar Rapids, Iowa
J. C. Hubinger Bros. Co., Keokuk, Iowa
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Keever Starch Company, Columbus, Ohio
Piel Bros. Starch Co., Indianapolis, Ind.
A. E. Staley Mfg. Company, Decatur, Ill.
Union Starch & Refining Co., Edinburg, Ind.

Resume of the National Canners Convention

(Continued from page 11)

picion at once fell upon the turkey.

"In this case, we were fortunate in getting most of the carcass for study. The turkey had an unpleasant odor, looked moldy and decomposed, and gave evidence of putrefaction. Our chemists prepared an extract from the meat of this turkey in accordance with the classical method for extracting ptomaines, and when this extract was injected into laboratory animals it produced symptoms something like that observed in those who had eaten the turkey itself. It, therefore, appears that we had actually obtained a ptomaine in captivity.

"I then bought a fresh turkey, sound and wholesome, and induced our chemists to pass it through the same manipulations they had used upon the decomposed turkey. The result was that precisely the same poisonous extract was obtained from the meat of the fresh turkey that had been obtained from the meat of the decomposed bird.

"We have studied the bacteriology of over two thousand cans of all sorts of goods put up in all parts of the country. We purchased these samples upon the open market, taking care to obtain sound, prime articles of good quality. Each can was given a searching examination for the presence or absence of bacteria. We were particular to include a great variety of products, such as vegetables, fruits, meats and fish, milk, soups, etc., in this investigation.

"It was no surprise to us to learn that some of the cans contained live spores. Every bacteriologist knows that some spores are able to resist the ordinary temperatures of cooking, but can be killed by the higher temperatures and time used in some pressure processes. Spores are like the seeds of plants in that they will only germinate under special favorable conditions of soil, temperature and moisture. The conditions in most canned food do not favor the germination of the spores. The next question that naturally arose was whether these live spores have any influence whatever upon health. In order to answer this question, an experimental lunch club was organized. Each one of the 1,750 cans of food examined bacteriologically was eaten at these luncheons. The food was not cooked before it was eaten. The tests extended over a period of sixteen months, including two summers.

Safest Foods That Come to Table

"No ill effects whatever could be discovered as a result of the experiment. This seems reasonable when we remember that fresh food often contains myriads of these same live microorganisms; in fact, we do not expect fresh meat, milk, fruits and salads to be sterile. By contrasts, then, canned foods are the safest foods that come to our table on ac-

CANNED SALMON

ALL GRADES
ALL SIZES

Largest Distributors in the World

KELLEY-CLARKE CO.
New York City Seattle, Wash.

Hens hadn't gone on strike in those days

Think of the shock the housewife of today would get were she to open a cook-book to a recipe for a simple cake and read "Take twenty-two eggs"!

Recipes calling for as many as thirty-six eggs, and even "common biscuits" using six eggs were no novelties to the home maker of the olden days!

But now, thanks to careful study and persistent research in science, delicious cakes can be prepared without depending on a large quantity of precious eggs to make them light and digestible. Especially is this true with the use of Ryzon, the Perfect Baking Powder, which is the latest chapter in the history of leavening agents. It is accurate, scientific, economical and absolutely dependable.

Ryzon is packed in full 16 ounce pounds—also 25c and 15c packages. The new Ryzon Baking Book (original price $1.00), containing 250 practical recipes, will be mailed, postpaid upon receipt of 30c in stamps or coin, except in Canada.

RYZON
THE PERFECT BAKING POWDER

GENERAL CHEMICAL CO.
FOOD DEPARTMENT
NEW YORK

The Ryzon level measure

Breakfasts for Five

At this writing, this is what some breakfasts cost, figuring the main dish only.

5c

In Quaker Oats
you serve five big dishes for 5 cents, and this is the food of foods.

60c

Lamb Chops
Chops for five will cost about 12 times Quaker Oats.

40c

Round Steak
to serve five, would cost about 40 cents, or 8 times Quaker Oats.

50c

2 Eggs Apiece
cost some 50 cents. And that is 10 times Quaker Oats.

Or Figure This Way

The better way is to figure by calories. The calory is the energy measure of food value.

A man must have 3,000 calories per day, else he is underfed. A woman needs 2,500, a boy 2,000.

What you really buy in food is these calories of nutriment.

How to Save 88%

This is what calories cost at this writing in some necessary foods:

Cost Per 1000 Calories

Quaker Oats . . .	**5½c**
Average Meats . . .	**45c**
Average Fish . . .	**50c**
Eggs about . . .	**70c**
Vegetables . .	**11c to 75c**

Thus a meat, egg or fish breakfast will cost nine times a Quaker Oats breakfast—on the average—for the same calory value.

You can save some 88 per cent by serving Quaker Oats.

And the oat, you know, is the greatest food that grows. It is almost the ideal food in balance and completeness.

It is the vim-food and the food for growth. Every mother knows how children need it.

Make Quaker Oats your basic breakfast. What you save will help you buy the costlier foods for dinner.

Quaker Oats

The Supreme Food at Its Best

Quaker Oats is flaked from queen grains only—just the rich, plump, flavory oats. We get but ten pounds from a bushel. The result is a flavor which is famed the world over. Get it, for it costs no extra price.

15c and 35c per Package

Except in the Far West and South

Packed in Sealed Round Packages with Removable Cover

Your Husband Should Get You A Toledo Fireless Cookstove

He likes to have a good dinner waiting his homecoming; he wants you to look attractive; he realizes that you should get out more in the afternoons. The one thing that will accomplish all these results is a Toledo Fireless Cookstove.

A Marvel of Baking Efficiency

Toledo Fireless Cookstove can do practically any kind of cooking—including baking and roasting—that a kitchen range can do, because of the heat-conserving, triple seal top, with its patented Water-Seal, a water-filled groove in the top of cooking compartment, to keep heat from escaping between compartment top and cover.

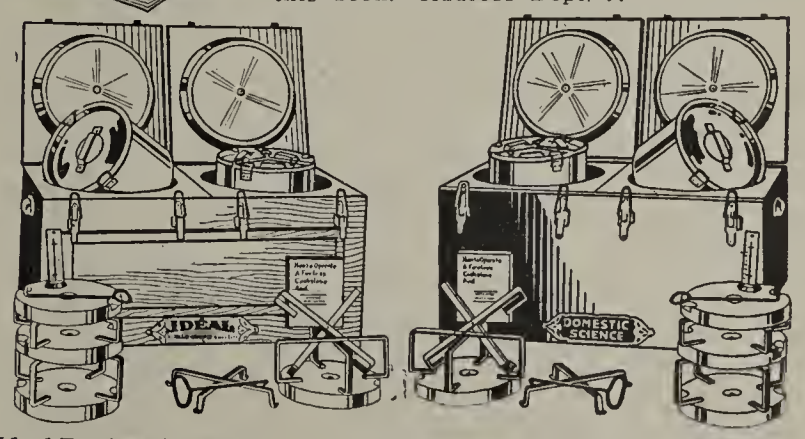
Saves Fuel

You can bake your bread, biscuits and pies, roast meats and cook vegetables in the Toledo. By heating the soapstone for fifteen or twenty minutes you can do cooking that would take hours of fuel burning in your range.

Gives You More Time Away From Home

You can put the unheated foods in the Toledo and go out for hours, returning to find dinner, perfectly cooked and piping hot, ready to serve. You will find that everything cooked in it has an added deliciousness, the toothsomeness of cooked-in flavors, the tender delicacy of thoroughly cooked foods. A store in your town doubtless has Toledo Fireless Cookstoves.

"Delicious Fireless Cooked Dishes" is a fireless cooking demonstration, with colored photographs and recipes. Write for this book. Address Dept. 7.



Ideal Fireless Cookstove **Domestic Science Fireless Cookstove**

TOLEDO COOKER CO.

TOLEDO :: :: :: :: OHIO

Jiffy-Cup Free

This is a half-pint aluminum cup. Fill twice with boiling water to dissolve one package Jiffy-Jell.

It also holds an exact cup, as called for in many recipes.

Send two (JJ) trade-marks in the circle cut from the fronts of Jiffy-Jell packages, and we will mail the cup.

Address Jiffy Dessert Co., Waukesha, Wis.

Real-Fruit Desserts

Jiffy-Jell alone brings you fruit-juice essences in bottles There's a vial in each package.

We crush the fruit, condense the juice and seal it. So you get the real fruit, and a wealth of it, in Jiffy-Jell.

Compare it with the old-style quick gelatine desserts. Learn how much the real fruit adds.

Millions who have done this have adopted Jiffy-Jell.

10 Flavors in Glass Vials

A Bottle in Each Package

Strawberry	**Cherry**	**Loganberry**
Pineapple	**Lemon**	**Raspberry**
Orange	**Coffee**	**Lime—Mint**

Jiffy Dessert Co.
Waukesha, Wis.

count of the processing to which they have been subjected.

"Canned foods not only have the cleanest bill of health of any class of food, but they have, in fact, become a public utility in the sense that they are now a necessity. It would be impossible to get along without them as society is organized today. They are not perfect, but can be improved by attention to well-known principles; that is, food to be canned should be as fresh as practicable, as clean as possible, and then processed at a temperature and time that will sterilize it. In other words, fresh, clean, and sterile foods are absolutely safe. That is the ideal to strive for and that is also the best insurance for the industry and the best protection for the public health."

State of New York Department of Farms & Markets Division of Agriculture

Commissioner of Agriculture Charles S. Wilson is rigidly enforcing the law providing for correct tests of butter fat in milk and cream delivered by producers. The commissioner has just obtained a judgment, in the Supreme Court of Erie County, for six hundred dollars, against the Fairmount Creamery Company for violating the agricultural law in giving incorrect credits to producers of cream as to the milk fat content of such cream purchased by the company.

Section 33 of the Agricultural Law, for the protection of farmers delivering milk and cream to dealers, provides—

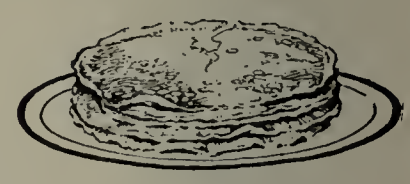
"No person or persons receiving or purchasing milk or cream on the basis of the amount of fat contained therein, shall credit patron or patrons delivering the milk or cream thereto with a greater or lesser percentage, or average percentage of fat, than is actually contained in the milk delivered. The Department of Farms and Markets, or persons employed by it for that purpose, may, at any time, assist in making tests of milk and cream received at such manufactories, plants or places." Penalties are provided.

In the case of the Fairmount Creamery Company, which purchases milk from some 8,000 farmers in the western part of the state, Commissioner Wilson directed George E. Hogue, chief of the Dairy Bureau, to have tests made of milk and cream delivered to the company's branch in Buffalo. Commis-

WANTED

Woman to handle Industrial Lunch Room. Prefer one who has had special training and some experience. This position is a splendid opportunity with a large Cotton Mill in Massachusetts. Any one qualified for this position please get in communication with us at once.

Patterson Publishing Co.
38 So. Dearborn St. Chicago, Ill.



Pancakes that are perfect every time—light, tender, digestible! That is what you are sure of when you use Aunt Jemima Pancake Flour.

Everything to make good pancakes comes ready mixed in this famous flour—specially ground cereals, leavening, even sweet powdered milk. There is no chance of failure. And the flavor of Aunt Jemima Pancakes has made them the most popular breakfast in America.

Aunt Jemima Buckwheat Flour, too, is well worth knowing. It is ready mixed, like the pancake flour—and gives you the good old-fashioned buckwheat flavor with none of the old-time inconvenience.

"I'se in town, Honey!"

Copyright 1920, Aunt Jemima Mills Company, St. Joseph, Mo.

sioner Wilson took this action on evidence that the company was not crediting producers with correct percentages of butter fat. Agents of the Division of Agriculture obtained evidence, which was submitted to the attorney-general and papers in the complaint against the company were filed in supreme court in Buffalo. In some instances, it was alleged there was a discrepancy against a producer of 5 per cent. It was charged that some producers delivering 45 per cent cream were rated at 40 per cent, and that there were lesser discrepancies in other cases.

Commissioner Wilson stated that the correct testing of milk and cream where payment is based on the butter fat test, is simply a matter of justice to the producers, and that the verdict in favor of the state in the western New York case will, undoubtedly, aid the rigid enforcement campaign.

McCormick & Company Expanding

It was just 30 years ago that a young Baltimorean, transplanted from Virginia, inspired by an idea which was at that time all too uncommon, and certainly little put to the proof, determined to stake his small capital and his efforts upon a business venture. That venture was the manufacture of flavoring extracts; that idea, which became his slogan, was "make the best, somebody will want it"; and this young Virginian was Willoughby M. McCormick, founder of McCormick & Co., of Baltimore, today its energetic president and general manager, also president of the Baltimore Commercial Bank.

But what has been accomplished

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

Rumford

THE WHOLESOME
BAKING POWDER

insure whiter, sweeter and lighter cake and bread—it raises the baking just right, and aids to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

RUMFORD CHEMICAL WORKS,
Providence, R. I.

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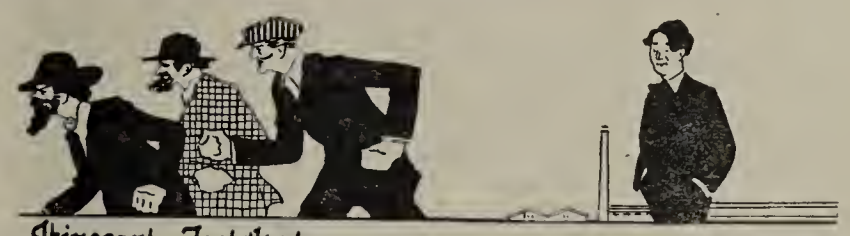

Itinerant Trotskys may as well troboffski

THE classy edition (who said "classic?") of "A Further Palaver on Paper," just finished by the Roycrofters for us, shoots a lot of interesting dope on KVP—not full of holes either—including some observations of an "outsider" on labor conditions at the mill. Most of the boys and girls out here work with us and not for us, which helps put KVP quality into such of our paper as *you* use.

The book is democratically free!

Kalamazoo Vegetable Parchment Company

KALAMAZOO, MICHIGAN

Makers of Waxed Papers and Vegetable Parchment

in those 30 years of business building?

To answer this is not an easy task, for those 30 years have been full of achievement, and the little venture, which was launched in 1889, in a small building on Hanover street, near Lombard, and which occupied but the first floor and basement of

that structure, small though it was, is today the largest tea, extract, spice and drug business in the United States, employing 55 salesmen and with annual sales running into millions of dollars. In its attainment of that eminent position it has outgrown its accommodations eight times. To meet the demands of the eighth time, which is the problem of the present, McCormick & Co. announce a building project involving the expenditure of $1,500,000, the erection of a structure second to none to be found anywhere in the world devoted exclusively to the manufacture and packing of its own specialized products.

Do you know how a big Factory feeds its help? Ask for particulars on our other magazine, THE AMERICAN RESTAURANT.

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

Send Them Sales Letters

You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, "*Value of Sales Letters.*"

ROSS-GOULD Mailing Lists St. Louis

EAGLE "MIKADO" PENCIL No. 174

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For Sale at your Dealer. **Made in five grades**

Conceded to be the Finest Pencil made for general use.

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"The Pure Spread For Daily Bread"—

"Purity" Margarine.

Serve it on your table. Cook with it. Bake with it.

Learn to know its quality and fine flavor. Make your own comparisons.

Let the test of taste decide.

And then ask yourself this frank question:—"How long can I permit an old-time prejudice to prevent my buying this pure food regularly?"

THE CAPITAL CITY PRODUCTS CO., Columbus, Ohio

Also Makers of Nut Margarine

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY
Chicago *In Business 66 years* U. S. A.

E. PRITCHARD

Packer and Manufacturer of the Finest

"EDDYS" BRAND

Canned Foods, Jellies, Preserves, Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

What the American Eats

Dr. Sherman, of Columbia, publishes the following table as showing the proportionate cost of the several items which make up the bill of fare of the average American:

TABLE

Type of Food—	Cost in percentage of the total expenditure for food
Meats (including poultry and fish)	32.7
Eggs	5.2
Milk (including cream if used)	9.6
Cheese	0.9
Butter and other fats	9.5
Breadstuffs and other grain products	18.1
Sugar, syrups and molasses	4.7
Vegetables	10.7
Fruit	5.2
Nuts	0.2
Miscellaneous	3.2

According to the above table, the average American expends more money for meats than bread, breakfast foods and milk together, or for milk, butter and vegetables. If nuts were substituted for the meat the cost would be about 4 per cent instead of 32.7 per cent and the saving in food cost would be more than 28 per cent.

That the large percentage of meat is unwise is well shown by Professor Sherman. He observes: "In prolonged feeding experiments milk is found to be vastly superior to meat. Neither in its inorganic nor in its vitamin content is meat suited to take the place of milk or green vegetables in nutrition.

"Hence we can no longer think of milk and meat as interchangeable or of meat as a full equivalent of milk in the diet, and it becomes important for us to ascertain whether the relative prominence in American dietaries of meat on the one hand and of milk (or of milk, vegetables and fruit) on the other, are such as our present knowledge of nutritive requirements would indicate as desirable."

This very able authority still further remarks:

"As a guide for the individual housekeeper, Mrs. Rose offers the rule: A quart of milk a day for every child under six years; at least a pint a day thereafter until growth is complete; at least a half pint for every adult.

"Lusk has advised that the housewife having a family of five to feed should buy three quarts of milk before she buys a pound of meat, and McCollum has also issued emphatic warning against any reduction of milk consumption on account of the unavoidable rise in price. Quoting McCollum:

"'We have long been accustomed to the use of milk in liberal amounts in cookery and of cream, butter and cheese. It is not generally appreciated that these articles have a dietary value far greater than can be expressed by their protein and energy content. They act as correctives for the deficiencies of the cereal grains and without them the nutrition of our people will suffer serious impairment. . . . We could entirely dispense with meats without suffering any ill effects whatever; but if we permit the use of milk, even in the diet of adults, to fall much below the present consumption, its effects will soon become apparent in our national efficiency.'

"Thus the consumption of less meat and more milk, which the present food situation and the policy of the Food Administration demands, is plainly desirable also from the standpoint of our present knowledge of nutrition."

Before war conditions had made meat saving a matter of patriotism many students of nutrition had begun to urge that the use of milk,

THERE IS

CLEANLINESS, HEALTH INSURANCE, ECONOMY AND CONVENIENCE IN

Our **PET** BRAND **Evaporated Milk**

The Standard of the World

Wins and Holds Trade on account of its Superior Quality

PREPARED BY

Helvetia Milk Condensing Co.

HIGHLAND, ILLINOIS

ORIGINATORS OF EVAPORATED MILK

MORRIS

Supreme Marigold

It's delicious for eating and for cooking—Morris Supreme Marigold Oleomargarine.

Try it spread thick on bread; there's nothing more pure, wholesome and economical.

Request the brand packed under the yellow and black label.

Wholesale Distributors

MORRIS & COMPANY

CHICAGO

vegetables and fruit should be increased and that this might be accomplished economically by transferring to the purchase of these foods a part of the money ordinarily spent for meat. The writer had suggested as a general guide, applicable to households both of small and liberal income, that as much more should be spent for milk as for meat, and that as much might well be spent for fruit and vegetables together as for meat.

It would appear that the general growth of knowledge of food values is gradually improving the consumption of milk and vegetables in city families and that progress in this direction can be very greatly promoted by teaching—even if this be entirely non-technical and more or less incidental.

The teaching of a higher appreciation of milk and vegetables as food is a matter both of patriotism and of applying the newer knowledge of nutrition to the promotion of the public health and the improvement of our national food economy.

RECENT PATENTS

1,319,190. Machine for spacing lumps of dough. Frank H. Van Houten, Beacon, N. Y., assignor to Dutchess Tool Co., same place.

1,319,238. Method and apparatus for sterilizing and preserving milk and other fluids. Joseph F. Moscrop, Omaha, Neb.

1,319,370. Bakers' machinery. Frederick J. Wolff, Belleville, N. J.

1,319,406. Machine for making ice-cream cones. Frank Mantell, Connellsville, Pa.

1,319,541. Citrus-fruit washer and drier. Theodore Wang, Clearwater, Fla.

1,319,605. Apparatus for drying vegetables and other substances or material. John H. Morton, London, England.

New Government Publications

The following publications were issued by the United States Department of Agriculture.

Currants and Gooseberries. Farmers' Bulletin 1024.

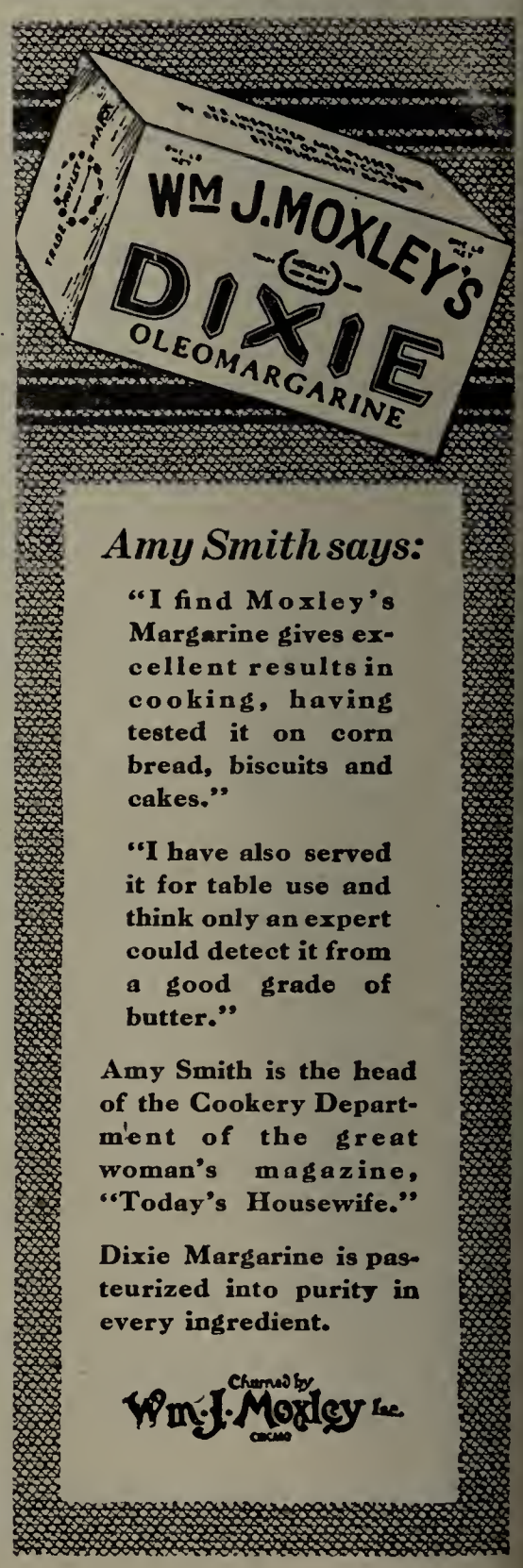
Retail Prices of Nitrate of Soda and Acid Phosphate. Department Circular 39.

The Commercial Apple Industry in the United States. Yearbook Separate 767.

Every Kind of
WARD'S
FAR FAMED
BREAD and CAKES
is the finished and perfected result of skill, science, experience, and the use of highest grade materials.

WARD BAKING COMPANY
New York Boston Providence Cleveland
Brooklyn Pittsburgh Chicago Baltimore

TIN and FIBRE
CONTAINERS
for
Foods—Drugs—Oils
Infinite Variety
Large Capacities
Prompt Deliveries
American Can Company
Chicago New York San Francisco
With Offices In All Large Cities



Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

Dixie Margarine is pasteurized into purity in every ingredient.

Churned by Wm. J. Moxley Inc. Chicago

THE AMERICAN FOOD JOURNAL

The Vital Necessity of Right Feeding for Children

History and Development of Cotton Seed Oil Industry

Wood Alcohol Poisoning

Peanut Oil

Methods of Detecting Decomposition in Catsup

Cutting Cooking Costs

MARCH, 1920

COMPRESSED YEAST *and* GOOD HEALTH

For a number of the common ailments that affect most of us at intervals

Fleischmann's Yeast

is a positive cure.

Ask for our interesting booklet that tells the whole story

THE FLEISCHMANN COMPANY

"THE ATLAS LABEL PROTECTS YOU"

Research and Testing Laboratory No. 3—New York

The "Atlas" Label on every original package of flavor and edible color means that H. Kohnstamm & Company guarantees the contents to be suitable for food products and to strictly comply with the National Pure Food laws.

"First Producers of Certified Colors"

H. KOHNSTAMM & CO.

Established 1851

83-93 Park Place, New York **11-13 East Illinois Street, Chicago**

The Miracle on Your Table

THE days of "miracles" have never passed. Never was the world so filled with miracles as it is today—the miracle of the faucet which brings us water from miles away—the miracle of the gas flame by which we cook without the discomforts of old-time methods—the miracle of the telephone.

Consider for a moment the amazing miracle of *canned foods.*

Here is asparagus—fruit—beans—peas—corn—tomatoes, etc., each from that part of the country where climatic conditions, or conditions of the soil, produce the finest varieties and consequently have caused canneries to be there established.

Not long ago canned foods were regarded as delicacies, far beyond the reach of everyday pocketbooks.

The vast development of the canning industry has changed all this. The humblest family now revels in Columbia River or Alaskan salmon and blithely orders beans that were grown and packed a dozen states away. The whole country is a great recruiting ground for canned foods.

Washington, D. C., is the headquarters of the National Canners Association, whose research laboratories are there located.

Questions of great moment to the canning industry are there threshed out. A staff of scientists investigates problems bearing on the scientific aspects of the canning industry.

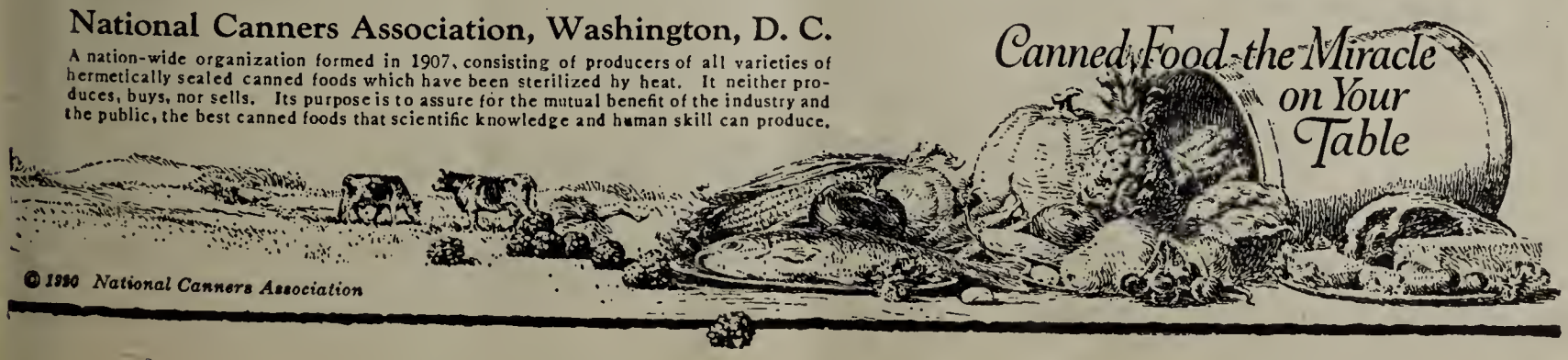
The results of these investigations are made known to members of the Association—about 1140 of the principal canning establishments of the country—many with research laboratories of their own.

The work of the Association is of the utmost importance to every person in the land.

The next time you see a can of food—in the store or at home—look at it with new interest; it is a "modern miracle"—clean, wholesome and nourishing.

National Canners Association, Washington, D. C.

A nation-wide organization formed in 1907, consisting of producers of all varieties of hermetically sealed canned foods which have been sterilized by heat. It neither produces, buys, nor sells. Its purpose is to assure for the mutual benefit of the industry and the public, the best canned foods that scientific knowledge and human skill can produce.



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Domestic Science Recommends This Pure, Delicious Food

Domestic science experts know the high food value of Swift's Premium Oleomargarine. They recommend its use for this reason, and also because of its creamy richness and its delicacy. They know that it makes rich, light, fine-textured cakes, that it seasons vegetables to perfection. The finest bread these experts can bake tastes better when spread with

Swift's Premium Oleomargarine

It will make all your meals more delicious, too. Serve it on your table and use it in all your cooking. Your family will enjoy its flavor and benefit from its nourishing and energy-producing elements.

Prepared with the utmost cleanliness, it is never touched by hands. In cool, spotless rooms, the purest, finest materials are used to make this high quality food. It is economical, too.

Get a package today from your grocer.

Swift's Premium Oleomargarine is the most widely distributed brand of oleomargarine.

Swift & Company, U.S.A.

THE AMERICAN FOOD JOURNAL

Vol. XV MARCH, 1920 No. 3

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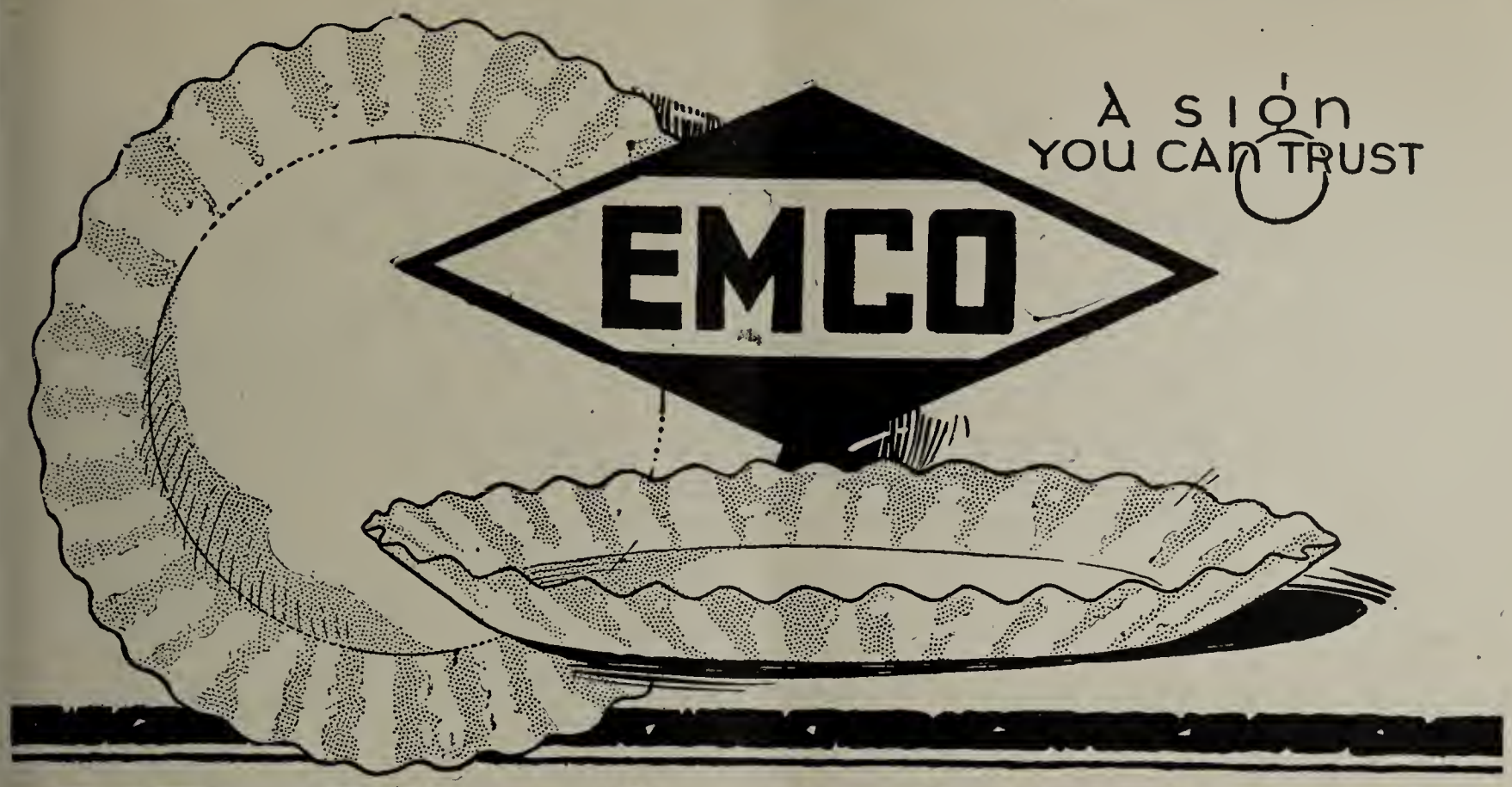

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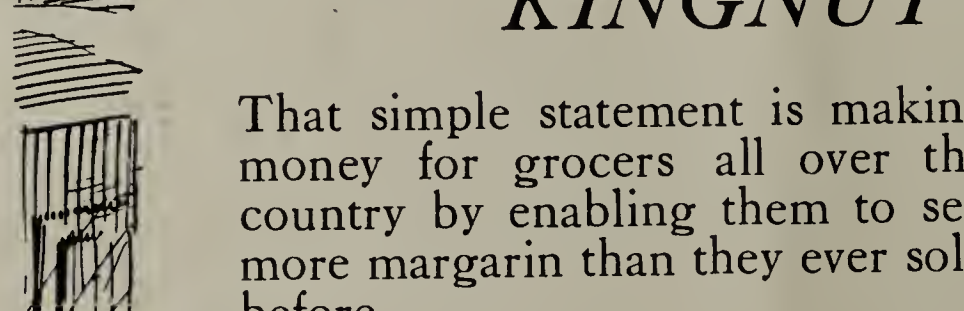


KINGNUT The Nut Margarin Sold On a Money Back Guarantee

THE AMERICAN FOOD JOURNAL

Vol. XV CHICAGO, MARCH, 1920 No. 3

Some Facts and Opinions

About Questions Now in the Foreground

Canning "Sweets"

In the farm canning of fruits and vegetables for the purpose of conserving surplus crops or those which cannot be economically marketed because of distance from market or of untoward weather conditions, the bureau of plant industry, United States department of agriculture, has in its experiments worked out satisfactory methods of canning sweet potatoes. Those now commonly used both on the farm and by commercial canners result in a product which has a more or less burnt and otherwise unpleasant flavor. These investigations have revealed the cause, and the new method results in a product essentially like fresh sweet potatoes. Canning tests have been made of twenty-four varieties, showing a wide variation in the value of different varieties for canning purposes.

Our Diet Changing

Whether it is because of the increased cost of meat or because people's tastes have changed, the fact remains that Americans are eating 8 per cent less meat than they were twenty years ago. This is disclosed in a recent dietary survey made by the United States department of agriculture.

In this survey 2,000 dietary records, each covering a period of seven days, were collected from 1,425 families and 575 institutions in forty-six states. Sixteen nationalities and many occupations and incomes were represented, as were also both urban and rural localities.

From a summary of 500 of these family records it appears that last year the average cost of food per man per day was 46 cents, with an average return in food value of 3,225 calories, 96 grams protein, 118 grams fat and 405 grams carbohydrate. These figures are in fairly close accord with the dietary standards ordinarily used in discussing such problems of general nutrition.

A comparison of the foodstuffs purchased by the 500 families with the amounts of the same food purchased by 400 families about twenty years ago shows that the amount of meat in the American diet has decreased about 8 per cent, and the amount of grain products about 11 per cent. People are eating more milk, butter and cheese than they were two decades ago, for the amount of dairy products consumed has increased about 6 per cent. Four per cent more vegetables and 8 per cent more fruit is being eaten now.

Some individual food habits undoubtedly need to be corrected, but, judging by these studies, it seems fair to coincide that the average diet seems to be adequate.

The World Likes American Canned Milk

More than a billion pounds of condensed milk were sent out of the United States in 1919, according to a report made by the National City Bank of New York. The export value of the product was $125,000,000. This vast quantity of milk was fifty times as much as in the year preceding the war. Every part of the world has apparently increased its purchases. The allied nations were forced to a greater consumption of canned milk during the war, but the fact that 1919 sales made a big advance over 1918 would indicate apparently that the product is well liked. France purchased 384,588,000 pounds in the fiscal year 1918 and 600,000,000 pounds in the calendar year 1919.

The Executive Committee of the Association of American Dairy, Food and Drug Officials will hold a meeting in Chicago on March 17th for the purpose of transacting such business as will properly come before the committee, including the selection of a meeting place for the 1920 convention and the arranging for a program for this convention.

Hon. Fred L. Woodworth, Food and Drug Commissioner of Michigan, has been appointed secretary of the Association to succeed Mr. J. S. Abbott. Mr. Abbott, who was formerly in charge of the Office of Cooperation of the Bureau of Chemistry of the U. S. Department of Agriculture, resigned this position to take effect February 29th, and has accepted the position of secretary of the Institute of Independent Manufacturers of Margarine. This change in position by Mr. Abbott necessitated his resigning as secretary of the association of food officials, to which position he had been appointed in the winter to succeed Mr. J. B. Newman, formerly director of the Division of Foods and Dairies in Illinois.

The present executive committee of the association includes Mr. Guy G. Frary, Hon. George L. Flanders, Professor E. F. Ladd and Mr. A. M. G. Soule.

The Vital Necessity of Right Feeding for Children

By ETHEL M. COLSON, Elizabeth McCormick Memorial Fund

THE question of right feeding for children is one of utmost importance to the child, the community, the nation. "Tell me what a man eats and I will tell you what he is," is no truer than "Tell me what a child eats and I will tell you what sort of a man he will grow into." Now, as never before, are physicians, parents, teachers, child students awake and alive to this faet.

Under-nourishment and mal-nourishment lie at the root of all manner of childish—and adult—trials and tribulations, physical, mental, spiritual. The under-nourished child is open to all sorts of unwholesome influences. He is unprotected against contagions, infections, all sorts of unfortunate health chances which have little or no effect upon his better conditioned fellow. He is apt to be low-spirited, fretful, unhappy. If he keeps up with his school work it is at great physical, nervous cost.

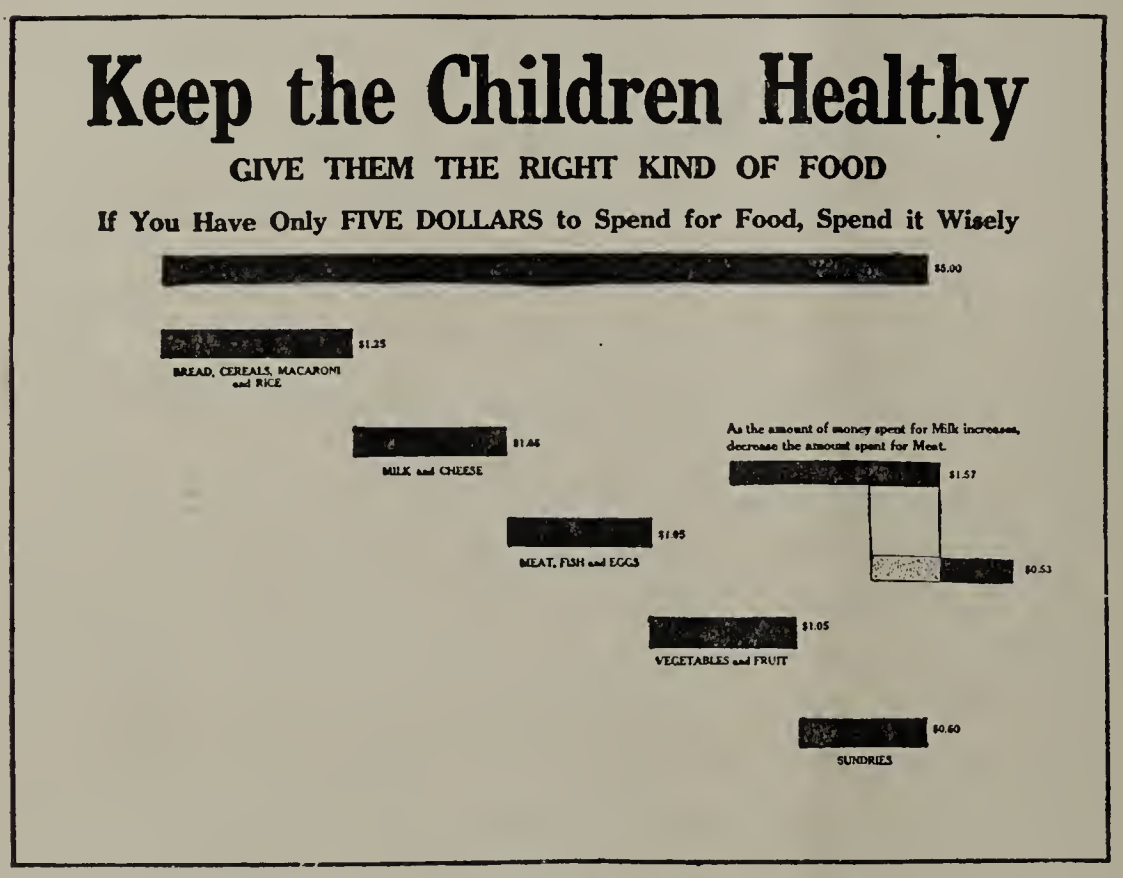
More than one-third of the public school children of Chicago are seriously under-nourished, according to studies of ten thousand children recently made by the Elizabeth McCormick Fund of Chicago. Many of them suffer from physical defects, which are the primary causes of the mal-nutrition, and which, if not corrected in time, will hamper them sadly, so that they will enter adult, working life regrettably unfit for life's battle. Others are the innocent victims of parental ignorance and the unwholesome conditions of our eomplex modern life.

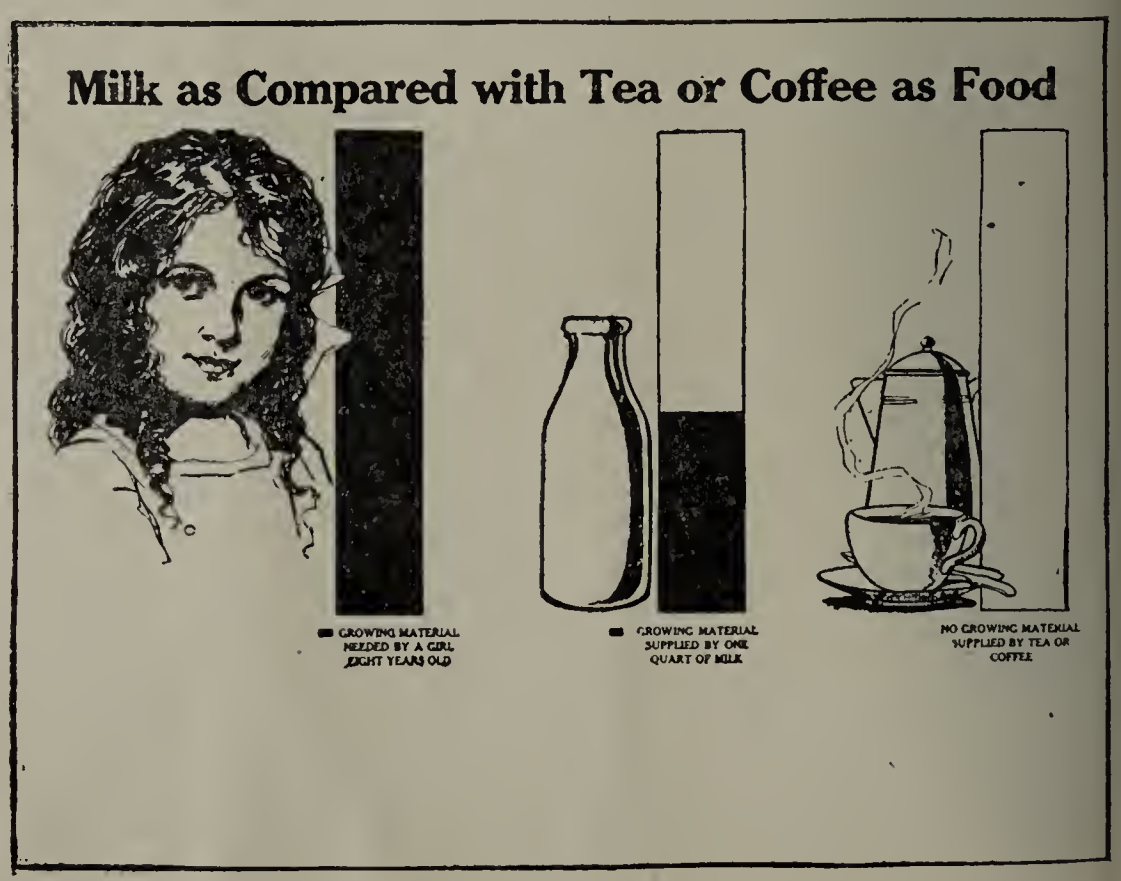
This is the more pitiable because, as now is known, the mal-nourished, under-nourished child, under the right conditions, is quite easily brought up to normal physical standard.

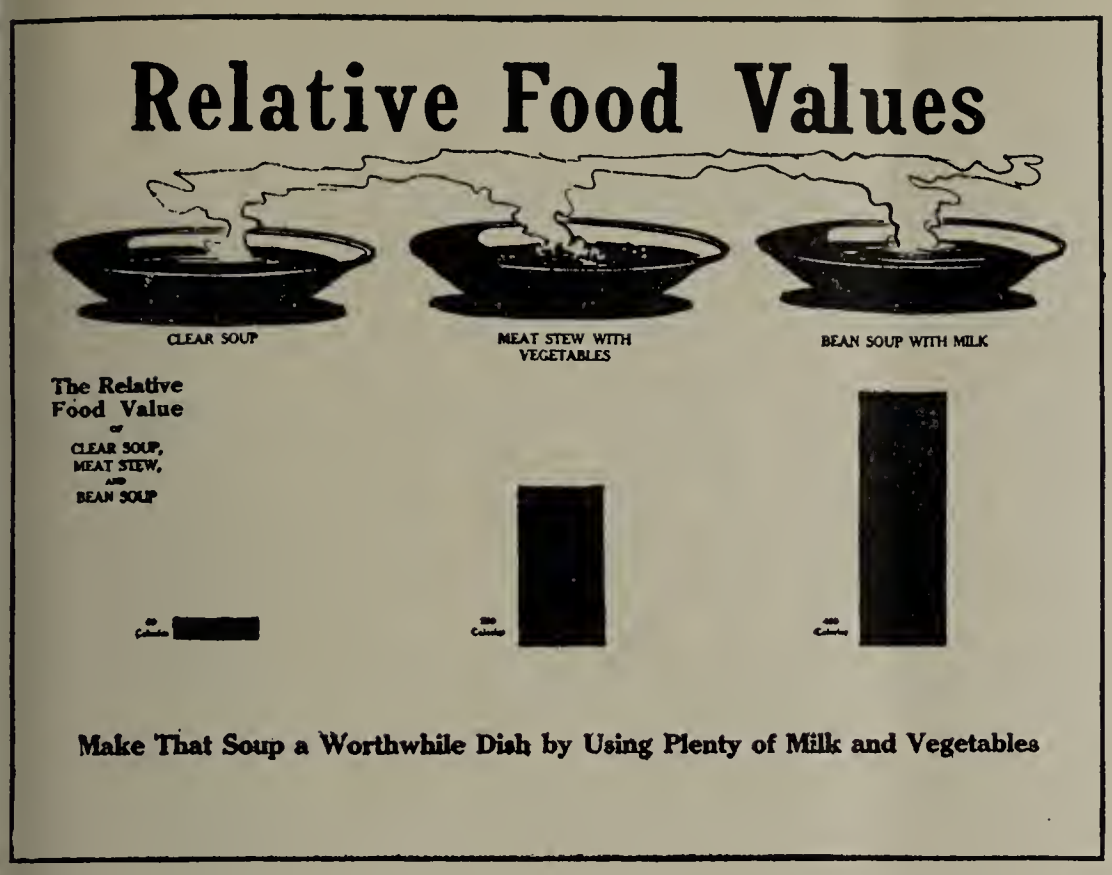
In other words, the child suffering from mal-nourishment, under-nourishment begins to recover as soon as he has his physical handicap removed, and is given proper food, rest and fresh air.

Lack of the right food, moreover, does not necessarily presuppose poverty, lack of parental affection or imply the hardest of living conditions. It much more frequently presupposes undirected feeding, too great variety of food—of the wrong kind—too much nervous stimulation, too little rest. The average of under-nourished public school children is no higher in the so-called "poor" or foreign districts than in good residential localities. Some of the worst cases of under-nourished children in Chicago have been found in high schools drawing their pupils from well-to-do, thoroughly comfortable homes.

Physicians and dietitians have long known that a measured, well-balanced diet was essential for growth and development in children, but few parents and teachers have shared their scientific knowledge, judging by the amount of mal-nutrition among our American children. The teacher, however thoughtful and devoted, has little opportunity in our school system, as at present organized, of studying, changing, supplementing or amplifying a child's diet; while mothers, too often, are in-







Make That Soup a Worthwhile Dish by Using Plenty of Milk and Vegetables

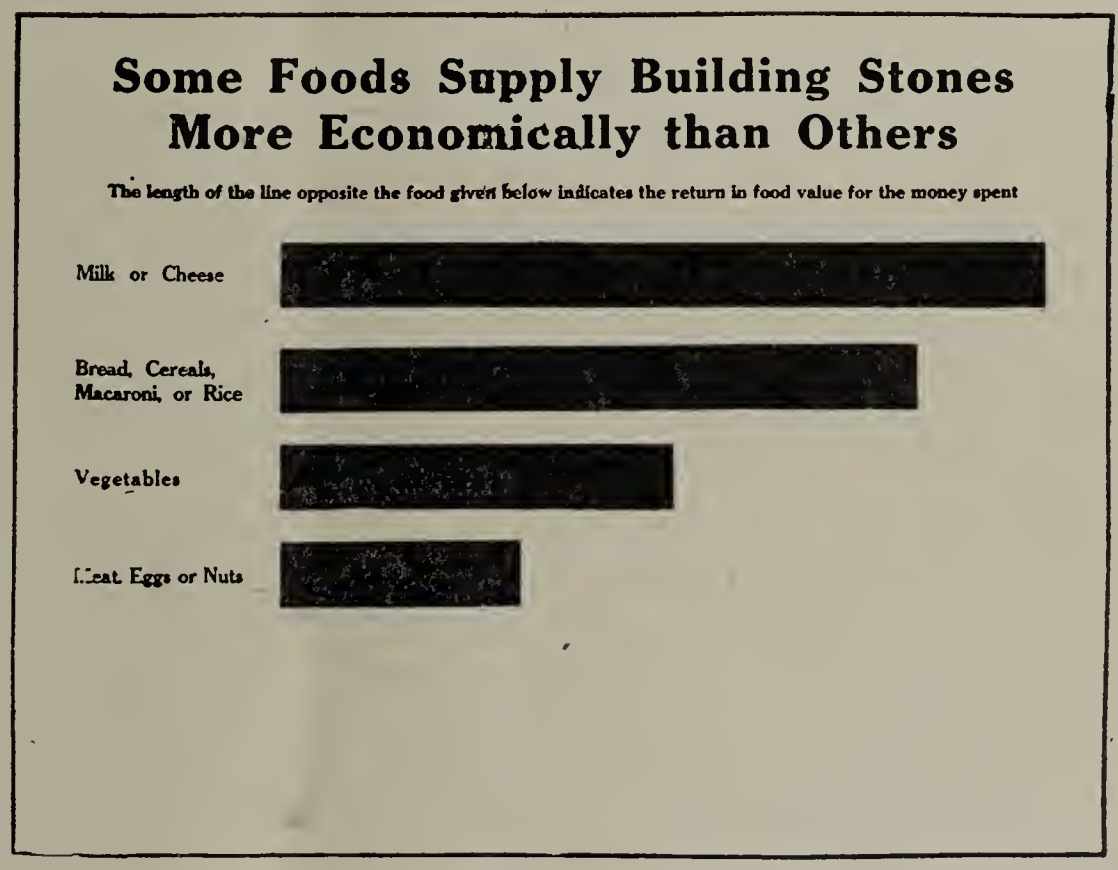
clined to fall back upon the mistaken old shibboleth of "The child's so thin because he's growing so fast!" or "It's natural for my family to be thin!" Putting the burden over on the ancestors instead of shouldering it themselves.

Obviously, a child who is growing fast or whose family heritage inclines toward the under-weight condition should be specially fed and protected. Rapid growth and family tendency toward leanness are not now accepted by competent child authorities, as valid excuses for the child's being below normal weight.

Dr. William R. P. Emerson, the well-known child specialist of Boston, who recently has revolutionized old systems of child-feeding and physical culture, finds that while there is no absolute fixed normal weight for a given age, there is an accepted average scale and a well-established relationship between weight and height. Just in so far as a child falls below this normal weight for his actual number of inches he is below grade physically and may be considered as retarded in development. Seven per cent under weight for height indicates one years' retardation according to Dr. Emerson, and this is sometimes mental as well as physical.

These facts are true alike of the kindergarten child and the high school pupil. Among the high school students of Chicago, less under parental control than the little ones, the under-nourished youngsters number more than among the lower grades.

Mrs. Ira Couch Wood, director of the Elizabeth McCormick Memorial Fund, a foundation devoted to the welfare of children, is in possession of startling facts of this nature. The attention of the Fund, which already has been responsible for many admirable child helping movements, is now directed toward the organization of nutrition classes in the public and private schools of Chicago.



The work in a given school is begun and carried on in co-operation with the school principal and teachers, and to the fullest degree possible of the parents. The children, room by room, are weighed and measured, without shoes or outer garments, but in their indoor clothes, and those found to be underweight are placed in nutrition classes. These classes are directed by trained workers supplied by the Memorial Fund and supervised by Dr. Emerson himself, who pays recurrent visits to Chicago for the purpose.

Each pupil in the nutrition class receives a thorough physical examination, always in the presence of the mother or father if possible. Physical defects are noted; medical treatment, if needed, is passed over to the family physician, or provided by some hospital or dispensary. Then each child is provided with a chart showing just how much weight must be gained to bring the condition to normal, calculation being based on the number of pounds proper for the recorded number of inches. Red and blue stars mark observance of proper rest periods, and mid-morning and mid-afternoon lunches; a gold star bears witness to the greatest gain in weight during the week. Red dots show the rising and falling of the weight line.

The children take keen interest in these charts, the competitive element adding zest to their weight-gaining efforts.

"I'll beat you all next week!" "Jennie got ahead of me this week, but I'll leave her behind next!" "I'll be playing football next term, you can bet on it!" these are exclamations frequently heard from a group of chart-studying children. It is insisted that mothers attend the weekly classes whenever possible, since their active co-operation is so urgently needed. Sometimes it is interesting to note, when mothers are held at home by illness, press of work, or smaller children, "big brothers" or "big sisters" attends in her place, or even father takes an "hour off" to

visit and find out "what it's all about, anyway."

A pertinent fact to be recorded in the underweight connection is that so often the youngsters most needing help look well enough, when clothed, to deceive their parents and to "get by" the school medical inspector. The bright American faces and becoming clothes often produce an appearance of physical well being pitiably at variance with the effect that follows removal of the clothing. Flat chests, drooping heads, winged shoulder blades, protruding abdomens, flabby muscles. spinal curvatures more or less slight, these combine to bring about the regrettable "fatigue posture" that surely spells malnutrition. Since every girl wants to be good looking, every boy athletic, the youngsters, once shown where they lack, usually are willing to work hard to gain.

Hampering physical defects being removed, and the child free to gain, the primal and peremptory requisite for improvement is good food in proper quantity. Three fairly good meals with light lunches in the mid-morning and mid-afternoon prove better then three hearty meals for these under-nourished children. Milk and cereals, the latter eaten with sugar and milk, are especially necessary. Butter aids greatly in bringing up the necessary number of calories. Fresh fruits and vegetables are much to be desired. The cost of providing good foods of the right kind for children is not prohibitive, even at present high prices, but all food consumed by children should be of best grade and chemically pure. Under correct dietetic conditions underweight children gain remarkably fast, and these children can often take from 3,000 to 4,500 calories a day while climbing up to normal standards.

After food, sleep. American children are apt to stay up too late at night, a fact which doubtless accounts, at least partially, for the bad physical condition found among high school students with good homes, safe environment and comfortable living conditions. Long, peaceful nights, with at least one, and if possible, two, brief rest periods daily, and temporary elimination of all unnecessary effort, help no little in bringing up the weight. Fresh air, at all times and seasons, is another important requisite. But most important, most vital of all, is the necessity of good food.

An under-nourished child, once normal weight is established, usually remains in normal condition without difficulty. The entire question of the child's future health, therefore, frequently turns upon proper weight-gain at a certain point of his school career. Since this gain, in turn, depends upon proper feeding, does not civic, humanitarian, national wisdom stress and emphasize the necessity of seeing to it that growing children receive an adequate allowance of the right kind of food?

Cereals: Kinds, Composition, Nutritive Value, and Cooking

THE cereals comprise all grains or corn-bearing plants, as barley, buckwheat, corn or maize, oats, rice, rye and wheat, and the products manufactured from them. Carter, Howe and Mason give the following table showing the composition of prepared cereals:

	Water per cent	Protein (Nx6.25) per cent	Fat per cent	Carbo-hydrate per cent	Fiber per cent	Ash per cent	Fuel value per pound Calories	Gram per Gal.
Barley, pearled...	11.9	10.5	2.2	72.8	6.5	2.6	1603	28
Buckwheat flour..	13.6	6.4	1.2	77.9	0.4	0.9	1577	29
Cornmeal granular	12.5	9.2	1.9	75.4	1.0	1.0	1620	28
Oatmeal	7.3	16.1	7.2	67.5	0.9	1.9	1811	25
Rice	12.3	8.0	0.3	79.0	0.2	0.4	1591	29
Rye flour	11.4	13.6	2.0	71.5	1.8	1.5	1626	28
Wheat flour	12.0	11.4	1.0	75.1	0.3	0.5	1610	28

The same writers say that corn and corn products show the same digestibility as other grains; that the products prepared from oats are highly nutritious; that rice is particularly rich in carbohydrate, but is deficient in fat and protein, and for this reason should never be employed as an exclusive article of diet, although it is as readily and thoroughly digested as other grains. Bread made from bolted rye flour is about as readily digested as wheat bread and is rather more nourishing.

Crissey in his book, "The Story of Foods," says that today cereals are prepared for the breakfast table in many ways; they are puffed, rolled, cracked, ground, shredded, malted and flaked.

Friedenwald and Ruhrah, when discussing the cooking of cereals, say that they are best cooked in a double boiler, the water being boiled and salted before the cereal is added. Cereals, like other starchy foods, require thorough cooking. When cereal flours are used, the flour should be rubbed to a smooth paste with a little cold water and added slowly to boiling water, stirring constantly until it is thoroughly mixed. They state the length of time necessary to properly cook the various cereals is as follows:

Cornmeal mush—Boil 10 minutes, then steam for 3 hours or more.

Oatmeal—Boil 10 minutes, then steam for 1½ hours or more.

Irish oatmeal—Boil 10 minutes, then steam for 8 hours or more.

Wheatena—Boil 10 minutes, then steam for 1½ hours or more.

Gluten mush—Boil 30 minutes.

Steamed rice—Boil for one hour.

Boiled rice—Boil for twenty minutes, or until soft.

See the article "Cereals" in Nelson's Encyclopedia and the following references:

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History and Development of the Cottonseed Oil Industry

By DR. DAVID WESSON

IT seems particularly appropriate at this first meeting of the Institute of Chemical Engineers in a southern city that an effort should be made to tell the story of how a great industry has been founded and built up on what was once a by-product and a nuisance.

The early records do not tell us much. We find in the statistics of South Carolina, published in 1826, that Dr. Benjamin Waring established a mill at Columbia, S. C., and expressed from cottonseed a very good oil. Georgia had an oil mill in 1832. but little is known about it. C. D. Arfwedson, an English traveler. in his book, "The United States and Canada, 1832, 1833 and 1834," states: "In many places it is usual to manure the fields with the seed not used for planting, but of late years experience has taught the planters to set a higher price on it, as it contains a considerable quantity of oil which is extracted by pressure and is suitable both for burning and painting. The oil may, in the course of years, become an additional source of wealth to the planters."

Up to the time of the Civil war and, in fact. for some time after, the disposal of the seed was always more or less of a problem. Much of it was used for fertilizer, and a great deal of it thrown into the water courses. In 1857 the State of Mississippi passed laws fining gin owners who allowed seed to accumulate at gins located near towns and villages, where it was apt to become a nuisance. The fine was $20 per day after the fifth day. Another law imposed a fine of $200 for throwing the seed into water courses, the waters of which were used for drinking and fishing.

The industry began to assume some importance just prior to the Civil war, after which it commenced to grow. In 1860 there were seven factories employing 183 workers. In 1870 26 factories employed 644 workers, while today about 900 factories give employment to about 20,000 workers and 5,000 officers and other salaried men.

The causes for the rapid growth of the industry are various.

First, the rapid increase of population all over the civilized world made increased demands for food. The doing away with the large cattle ranches of the West reduced the meat supply so that the hogs which formerly furnished an adequate supply of lard were more and more eaten as pork and a demand was made for an edible fat to replace the lard. This demand is largely met at this time by cottonseed oil and the growth of the cottonseed oil industry is largely coincident with the decrease per capita of the hog lard supply.

Second, the cottonseed oil produced in the early days of the industry was very irregular in quality. In 1879 it was used in small quantities to adulterate lard, but the quality was such that it did not improve the mixture. The application of chemistry to the industry at this time started it upon a rational basis and gave such a stimulus that it has grown by leaps and bounds ever since. The advent of the chemist started improvements in the quality of the oil and at the same time pointed the way to economies in production.

The most important work of the chemist has been in refining the oil and improving the products made therefrom. To do this principles had to be established in the laboratory and applied in the factory. In 1885 all the chemists in the industry could have been counted on the fingers of one hand. This included near chemists. At that time the duties of a refinery chemist included testing the oils, refining them, and finally shipping them in suitable cooperage. To do this he had to run pumps and engines, boss the coopers and steamfitters and be a steamfitter himself in an emergency. There was no eight-hour day with Saturday afternoons off, and needless to say the early chemists earned their pay and incidentally the refinery force did likewise.

The young man fresh from school and thrown on his own resources in a refinery soon became a chemical engineer without knowing it. In some ways the chemists of those days had an advantage over those of today. They were blazing their way thru an untrodden field little hampered with enlightening literature. They were guided largely by their ingenuity and experience, which later gave them a great advantage. In those early days any one who could refine crude cottonseed oil was regarded almost as a demigod. Very few of the early refiners employed chemists and depended entirely on trained workmen. Many of them were negroes. Little attention was paid to loss. Caustic soda was added by rule of thumb and the losses were enormous. Where losses were estimated, the measurements were crude. I have in mind one manufacturer who pumped all the oil from the crude mill to his refinery where it was refined by a $2.00-a-day negro with marvelously small losses. The owner was always bragging how much better Sam could do that than any high-priced chemist. The time came when this outfit was put under my jurisdiction and on investigation it was found that Sam was always charged with much less crude oil by the mill than he actually received, which was, of course, a great help in cutting down the apparent refining losses. As a matter of fact, Sam was actually running about 2 per cent behind plants operated under chemical control.

The early conditions have been presented at considerable length, so as to obtain a good starting point from which to sketch the effects of applied chemistry on the industry.

As the oil and its products constitute the important end of the industry it seems logical to talk about them first.

The first crude oil was for paint and burning in lamps. The early refineries kept their methods so secret that it has been difficult to discover when oil was first refined in this country. The writer remembers being told in 1870 that peanuts were pressed to obtain oil which was mixed with that of the cottonseed and sold for olive oil.

The early refineries were connected with the oil mills, but there soon arose people who recognized that refining the crude oil as furnished by the mills was an industry by itself and refineries started in several places.

The crude oil in the early '80s was sold on color and flavor, and in

case of disputes referred to committees. About this time the chemists discovered that free fatty acid in the crude oil was an index of quality and refining loss and applied the test in judging value of samples. A small laboratory refining test was made to see if the samples of crude would refine to a good color. The writer used this method in Chicago in 1887, and when in 1890 he commenced to reject oil in New York on account of high acidity he encountered much opposition, some mill owners protesting that they had never had any fatty acids on their premises.

Shortly after 1880 cottonseed oil began coming to Chicago in considerable quantities. Here it was refined with caustic soda, bleached with fuller's earth, mixed with prime steam lard and oleo stearine and went into commerce as refined lard. In 1887 it was discovered that more lard was shipped from Chicago than came there either on the hogs killed there or as lard itself. Congress started an investigation and discovered that cottonseed oil was the cause of this great increase. They also discovered that the 30 to 40 per cent of oil in the compounds did not injure them from a health standpoint, though the oil used at that time did not improve the flavor.

About 1892 or 1893 the practice of deodorizing was started in Chicago. This consisted in heating the oil in a tank provided with a large steam coil and then blowing live steam through the oil to remove flavor and odor. The oil was afterward cooled to normal temperature. This process, while producing a greatly improved oil, did not turn out a perfect one by any means. It allowed the lard substitute maker, however, to use a mixture of about 82 per cent oil and 18 per cent oleo stearine, which proved quite satisfactory to the trade.

In 1899 the "Wesson process," so called, was discovered and the first plant was put in operation in Savannah the following year. The product of this plant set a new standard for cottonseed oil, which has now become the chief source of edible fat next to butter in this country. From this discovery of the Wesson process to about 1910, lard substitutes were made almost entirely of mixtures of oleo stearine and deodorized cottonseed oil. The packer controlling the former put its price very high and the demand for a cheaper material was supplied by the discovery of the hydrogenation process which fulfilled the dream of the fat chemist by furnishing a ready means of saturating the double bonds of the fluid oils with hydrogen and converting olein and linolein to stearine. By passing hydrogen gas through oil at a temperature of 180 to 200 deg. C. in the presence of finely divided nickel, cottonseed oil can be hardened, to any extent up to a melting point of about 60 deg. C.

The lard substitutes of the present day are almost entirely produced either by partly hardening the whole oil or by adding sufficient completely hardened oil to that which has not been so treated. Besides the use of the oil in lard substitutes, which utilizes at present about 75 per cent of the total production, large quantities are used for table oils, oleomargarine, or margarine, as it is called in Europe. Considerable oil is also used in medicine.

In refining the oil an average of 9 per cent is taken out by the alkali in the form of soap stock. In the early days this was made into cheap laundry and mill soaps. Later this was made into washing powder by first saponifying and washing, then mixing with soda ash or sal-soda. At best the soaps made directly from the soap stock were poor in color and possessed an unpleasant odor. It is the practice in several large plants to decompose the soap stock with acid, then saponify by the Twitchell process or otherwise and distill the fatty acids from the black elastic pitch which remains. This pitch is used in making paints used for roofing. During the war considerable quantities of glycerine were recovered from the soap stock, but on account of changed conditions it has been found better to treat the soap stock with centrifugal machines of the cream separator type and recover a considerable quantity of the entrained neutral oil.

The first crude oil mills were somewhat primitive compared with those of the present day. No attempt was made to separate the lint from the seed before passing through the hullers. In those days the seed carried so much lint it was customary to figure meats and hulls as equal in quantity. The early mills burned the hulls under the boilers together with the trash in the seed. The separation was very poor and the hulls frequently carried large quantities of uncut seed and meats which helped account for the high hull percentage.

The separated meats were crushed between rolls, cooked in jacketed heaters and pressed in box presses provided with thick camelshair mats between which the bags holding the meats were placed. The yield of oil was small, a large amount being left in the cake and lost with the meats which went into the hulls.

An important by-product of the old-time mills was hull ashes, which amounted to about 20 lbs. per ton of hulls and were rich in potash and phosphoric acid. Actually the ash present was several times that recovered. On account of the character of the hulls much of the ash was carried up chimney. About 1887 it was found that the hulls could be used for fodder and cows have been eating them at increasing prices ever since. At the same time plat presses superseded the old boxes and better work was done in the press rooms. Linter or linter gins were also installed and the short fibres or lint was partly removed from the seed before hulling.

In 1887 the writer started a small laboratory in Chicago for analyzing mill products for the American Cotton Oil Co., which had just come into existence. The results on 244 samples of cake showed an average of 13.55 per cent oil, while 226 samples of meal averaged 12.18 per cent. Hulls were not analyzed, but inspected for meats and uncut seed. This was the beginning of mill control work in the industry. It has caused great economies and pointed the way to the use of better machinery. At the present time the meal runs from 6 to 7 per cent oil.

The cottonseed cake has always been either exported as such or ground into meal and used as a cattle feed or fertilizer. One of the latest developments is the extraction of oil from the cake and meal by solvents. At present prices this is a profitable industry. There is no good reason why solvent extraction should not be applied to the entire meats, cutting out the press-room expense and recovering 50 to 60 pounds of oil per ton of seed. If this were done it would have saved last year nearly 500,000 barrels of oil, worth about $34,000,000. There is nothing to prevent this development except fear of fire risk and investment of capital. It is a comparatively simple engineering problem which many of us will doubtless live to see accomplished.

Owing to war conditions many oil-bearing materials and oils have been brought to this country and handled in the cotton oil mills and refineries. So great has been the variety and quantity of these different oils that it would seem more proper at the present time and in the future to talk of the vegetable industry.

Wood Alcohol Poisoning

Chemists Have a Clear Duty at the Present Moment

By W. D. McNally

DURING a period of 13 years, 1905 to 1917, thirty deaths from wood alcohol were recorded in the coroner's office of Cook county. More than this number have occurred in the last six months. From the press reports it is noted that more than 118 deaths have been caused by this poison since December 25, 1919.

A person drinking wood alcohol has the same desire created that he would have for grain alcohol. When food is taken in excess a person experiences a feeling that destroys the desire for more food, but this is not true of alcoholic drinks, as the desire continues long after the alcohol has begun to exert its deleterious action upon the system. Grain alcohol is also a poison. The evil effects of excessive use are so frequently demonstrated in man it is hardly necessary to mention the symptoms. The post mortems in the morgues upon the bodies of confirmed drunkards and those dying of acute alcoholism have demonstrated repeatedly the existence of definite lesions in the organs, showing that it acts as a tissue poison.

Grain alcohol is readily oxidized in the tissues of the body to carbon dioxide, and it is only when taken in excessive amounts that the unchanged grain alcohol is excreted as such, while wood alcohol is oxidized to formic acid and formaldehyde. A drinker of wood alcohol is literally "pickeling" his own body in formaldehyde. As chemists we can bring this point home to our lay friends, emphasizing the poisonous action of wood alcohol. Unscrupulous men have been selling beverages containing 22 to 54 per cent of wood alcohol colored to imitate whiskey. These men are as guilty of murder as a person putting bichloride of mercury in your cup of tea or coffee. A man taking a "nip" from any source other than his own private stock purchased before last July is running a certain risk of getting hold of "moonshine" whiskey made from wood alcohol. The fact that the saloonkeeper drinks the same is not proof that it is a beverage that you would want, as several saloonkeepers have died from drinking their own concoction. Where death has not occurred blindness frequently results. Something must be done to save the "weaklings," who do not possess the strength of character to refrain from drinking "booze" of doubtful ingredients. Labeling it poison is not sufficient. The alcohol will be consumed by drink craving people regardless of the labeling.

The denaturizing agents allowed by the Government are not used in a large enough quantity to prevent drinking medicated alcohol. If some powerful emitic or nauseating chemical could be added that would not be harmful for the technical use of wood or grain alcohol some relief would be obtained. For the present we all should make it a point to spread broadcast our knowledge that wood alcohol is a poison and that one imbibing "Coroner's cocktails" is taking his life in his own hands. An educational campaign and more publicity by the chemists of the evils of drinking wood alcohol beverages will lessen the danger materially.—Chemical Bulletin.

Care of Food in the Home

Much waste of food is due to the carelessness in handling it after it is delivered in the home, thus the elaborate care exercised in bringing the food to the consumer is negated.

Few of us realize the patient care and oftimes burdensome labor incident to food production. The long hours of labor necessary to produce food in any form should give us a wholesome respect for it when it comes into our kitchens all ready to form a part of the family diet.

In case of vegetable foods, the preparation of the soil, selection of the seed, the planting, care while growing, harvesting and perhaps threshing all demand great care and much labor upon the part of the farmer and his family.

When this point is reached, the food product is put to one of two uses—it is fed to the live stock from which we obtain our milk, butter, cheese, meat and meat products, or it is sent to factories where, by means of much more labor and care, it is further prepared for our tables. By canning, as in the case of fruits and vegetables; milling, in case of grains, or if the farm product is a meat animal, through the many and complicated processes of the packing house the food is then prepared for transportation.

Perishable foods must be cared for in cold storage and transported in refrigerator cars, all of which occupies the time and energy of thousands of people.

Next, the retailer adds his services, and the article which has cost so much in money and energy is finally delivered in the home in good condition.

It is the duty of the housewife to unpack and properly put away all foods as soon as they are delivered.

Place butter, milk, oleomargarine, shortenings and frying mediums, eggs, and meat in appropriate receptacles and put them in the refrigerator.

Oleomargarine is one of the most carefully prepared products made and it should be given the same care one gives any delicately flavored spread. Use high-grade oleomargarine for a satisfactory, nutritious spread and for delicate baking purposes. Mocha frosting is delicious with oleomargarine as a basis.

Meat should be unwrapped, placed on a plate and put in the refrigerator, never directly on the ice.

Fresh salad materials should be cleaned, wiped dry, wrapped in a clean tea towel or put in a salad bag and placed in the refrigerator.

Place cereals, syrups, coffee, tea, spices, baking powder, salt, extracts and all canned foods upon the pantry shelf in groups.

Empty the flour sack into the flour can and keep in a cool place.

Always fill any vacancies on the "emergency shelf" when putting away the groceries.

Refrigeration and Ice Making Without Machinery

CREAMERY and dairy owners and perishable food manufacturers who are annually spending large sums of money for ice will be interested to know how Mr. B. R. Waldron, Califon, N. J., has solved his ice and refrigeration problems by installing the Boss'e noiseless, machineryless system.

Previous to the completion of his new installation it cost Mr. Waldron between $175.00 and $200.00 per week for ice. He already had a boiler installed for performing other duties, as is common in most creameries and dairies, and on finding that the new system would not require greater capacity, the money saving idea naturally appeal to him. The steam pipe to the generators is only one-half inch in diameter and is checked down to a one-sixteenth inch hole. All of the steam that is used to operate this eight-ton system must pass through this small hole.

Mr. Waldron claims that the cost of additional fuel for operating the system is so small that it is hardly noticeable. He says that it costs practically nothing because he would have to operate the boiler for other uses, anyway. The manufacturers of this system claim that the Boss'e system requires less than 400 pounds of steam per ton of refrigeration for an eight-ton system in the hottest summer weather. Referred to a fuel basis, with a good quality of coal, this would represent 400 pounds per day. With coal at $8.00 per ton of 2,000 pounds, this amounts to $1.60 per day, or $11.20 per week of seven days.

Comparing this low cost—$11.20 per week—with the previous cost of $175.00 to $200.00 per week, it becomes evident why Mr. Waldron is pleased with the improvement he has made in his creameries.

As now used this system makes two tons of ice every twenty-four hours, cools 4,000 quarts of milk over a direct expansion ammonia cooling board, and keeps a cold storage box down to a sufficiently low temperature so that surplus milk, cream and other dairy products can be kept in a clean, pure condition.

One of Mr. Waldron's principal reasons for selecting the Boss'e system in preference to any other is that this system requires no skilled labor to operate it. It has no machinery or moving parts of any kind, such as motors, engines, pumps, belts, shafting, pulleys, pistons, sliding rods, etc. It has no delicate valves to pit, warp or shrink. Since no oil is needed for lubrication there is no oil separator. There is no vibration or noise of any kind, hence no foundation is required. The system can be placed on a second, third or higher floor as safely as in a basement. Having no sliding rods to pack or wear, it is plain

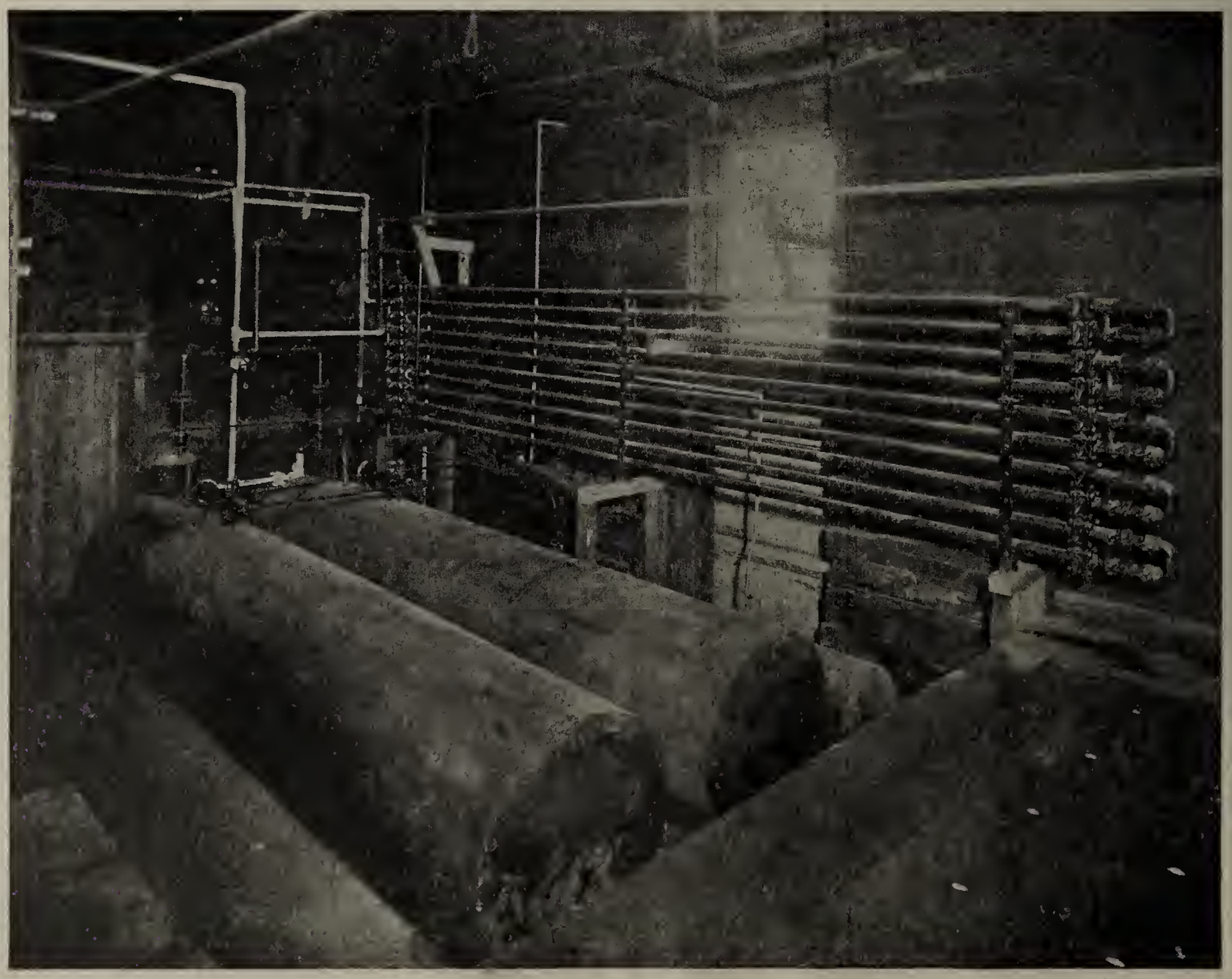


FIG. 1

Showing the two generators in the foreground. One end of the receiver is visible. The condenser, against the wall is in plain view. Part of the ice tank is visible at the right.

FIG. 2

The ice making tank and several cakes of ice. One end of the condenser and a small portion of the generators plainly visible in Fig. 1, can also be seen here.

FIG. 3

Showing the cooler above the filler below, and several filled bottles. Note the frost on the direct expansion section of the cooler.

that leakage, wear and upkeep expense are practically nil.

Another feature that appeals to Mr. Waldron as being valuable is the fact that this system requires very little attention. A man can operate the apparatus and at the same time do practically a full day's regular work at something else. During two hours of his time a day the man starts up the system by manipulating three valves and thereafter occasionally looks at the gauges. It is very simple, as simple as operating a boiler. The cost for labor is therefore practically nothing, since any man can operate the system while performing his other regular duties.

After starting, the system continues to operate through the balance of the day and night without any attention whatever. This eliminates a night man, or makes it unnecessary for a man to remain longer than his usual working hours.

Mr. Waldron claims that the system will pay for itself in a short time due to the saving on ice alone. In addition, an important saving results from cooling his milk colder than can be done with ice. He is thus able to take care of surplus milk and cream in his cold storage room.

The system is installed in what was the former ice house. Mr. Waldron states that his ice house is now always filled with all the ice and refrigeration he wants and needs and that he is not worried about whether or not the ponds and rivers freeze this winter.

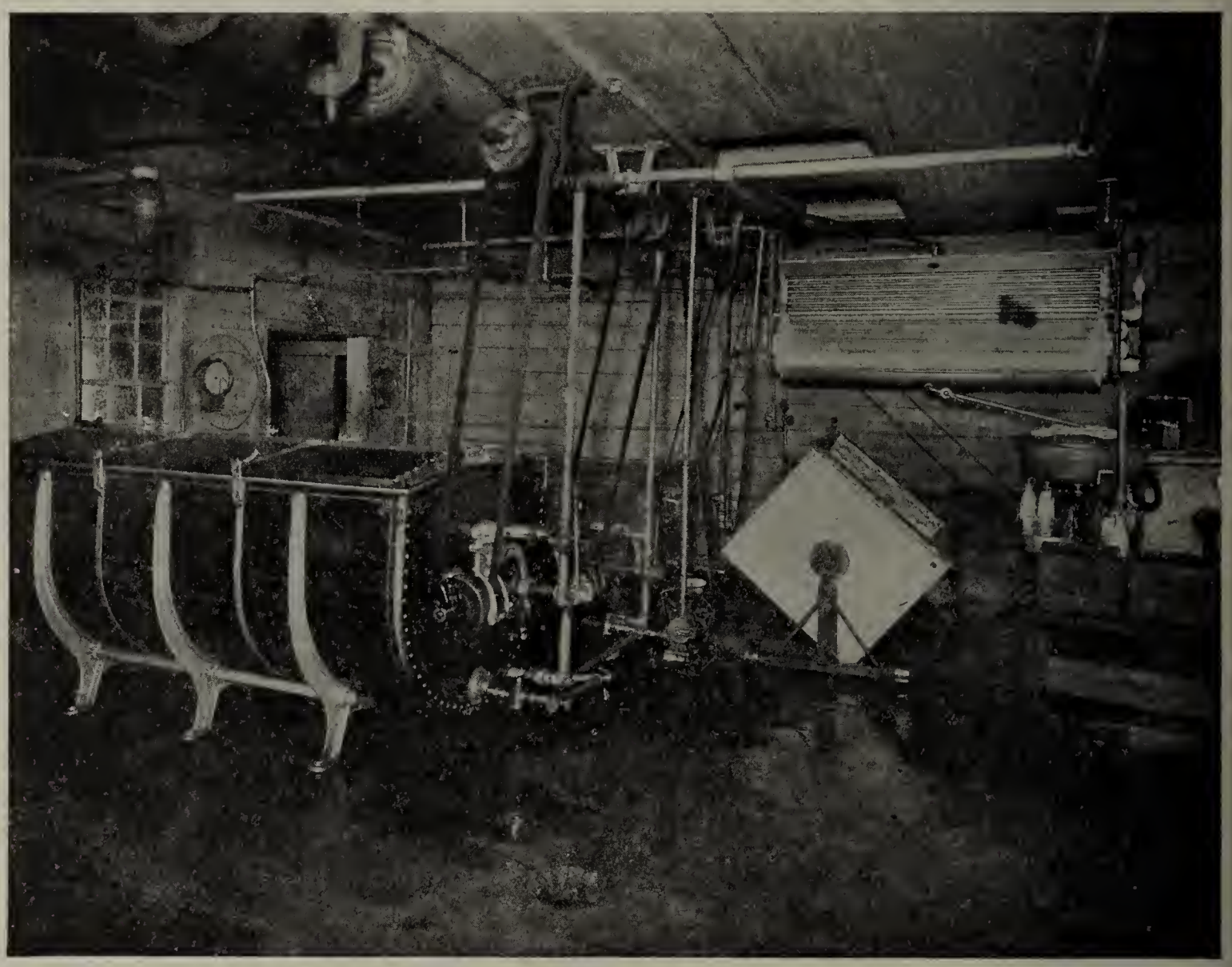


FIG. 4

General view showing the pasteurizer, cooler, and filler. The cooler and filler are more plainly visible in Fig. 3.

Buffalo Has Good Milk

Due to the educational efforts of the Bureau of Food Inspection of the Department of Health and the cooperation of a great majority of our milk dealers, the people of Buffalo, during the year 1919, have been served with an exceptionally good milk supply. Examinations of 3,589 samples from 139 city milk dealers show an average bacterial content of 58,000 per cubic centimeter, while examinations of the same samples for butter fat content gave an average of 3.55%.

Only 16 dealers of the 139 distributed milk with an average of more than 100,000 bacteria per c. c., the highest being 223,400; and but 37 dealers had an average butter fat content of less than 3.5% in their milk supplies, the lowest being 3.25%, our laws demanding a minimum of 3 per cent.

Our entire milk supply, except "certified," is required to be pasteurized, but, owing to unforeseen causes and due, at times, to indifference of a few dealers and the further fact that, although pastcurization is mandatory, no provision is made to require recording of temperatures and holding, we are satisfied that there is more or less violation of the pasteurization requirement which is reflected, to some extent, in milk conditions. Were it not for these derelictions, an even better showing would have resulted with greater credit to our local milk industry. The tabulated list of milk dealers and results of examinations of milk supplies are on file in the Bureau of Food Inspection for public reference. I would not conclude without giving credit to those milk producers who, through their efforts, have made it possible for city dealers to make such a splendid record.

S. W. Bateson,
Supt. Bureau of Food Inspection,
Dept. of Health, Buffalo, N. Y.

A statistical report furnished by the Swedish government delegation shows that in 1918 Denmark sent to Sweden foodstuffs to the value of $27,500,000, half consisting of butter. Norway sent nearly 50,600 tons of salt herring.

What Canned Goods Ought to Weigh

Bureau of Chemistry Weighs Canned Lima and Other Beans, Peaches, Pears, Cherries, and Other Things and Tells What the Contents Should Weigh. Label Must Show Net Weight When Offered for Sale

The Bureau of Chemistry, after an extensive investigation, has just issued a statement showing what the contents of standard cans of canned goods should weigh. Anything materially less will not be regarded full weight.

The Bureau recently has made an investigation of the amount of lima beans contained in cans of various sizes when the cans are packed to capacity without any resulting impairment of quality. It has been found that properly filled cans will, in general, yield at least the following drained weights of lima beans:

No. 1: 2 11-16 by 4 inch sanitary ....8.0 ounces
No. 2: 3 7-16 by 4 9-16 inch sanitary ....13.5 ounces
No. 10: 3-16 by 7 inch sanitary (72.0 ounces).....4 lbs. 8 ounces

A can of a size not mentioned here should yield a drained weight of beans which bears the same relation to the drained weight indicated for the can nearest in size as that existing between the capacities of the cans in question. These weights refer only to the immature grades commonly known as "green" lima beans, and do not apply to "white" and "soaked" lima beans.

The investigation indicates that properly filled cans of wax and refugee beans should, in general, yield at least the following drained weights of beans:

No. 1: 2 11-16 by 4 inch sanitary ....6.0 ounces
No. 2: 3 7-16 by 4 9-16 inch sanitary—
Whole beans .... (64.0 ounces) 4 pounds 3 ounces
No. 10:6 3-16 by 7 inch sanitary—
Whole beans .... (64.0 ounces) 4 pounds 3 ounces
Cut beans .... (67.0 ounces) 4 pounds 3 ounces

It has been found that properly filled cans of peaches will, in general, yield at least the following drained weights of peaches, the weight being determined in each instance by draining for two minutes on a 1/8-inch mesh screen:

No. 1 (fruit) 3 by 4 11-16 inch sanitary ....10 ounces
No. 2½: 4 1-16 by 4 11-16 inch sanitary ...(19 ozs.) 1 lb. 3 ozs.
No. 10: 6 3-16 by 7 inch sanitary .....(64 ounces) 4 pounds

These weights apply only to sliced peaches and peaches in halves. If sugar is used as such instead of syrup in packing peaches, the sugar should be added in such a manner as to cause no reduction in the amount of peaches which could have been placed in the can in case syrup instead of sugar has been added.

It has been found that properly filled cans of pears will, in general, yield at least the following drained weights of pears:

No. 1 (fruit): 3 by 4 11-16 inch sanitary ....10.5 ounces
No. 2: 3 7-16 by 4 9-16 inch sanitary ....13.0 ounces
No. 2½: 4 1-16 by 4 11-16 inch sanitary..(19.0 ozs.) 1 lb. 3 ozs.
No. 3: 4¼ by 4⅞ inch sanitary ....(22.0 ozs.) 1 lb. 6 ozs.
No. 3: 4¼ by 5 inch sanitary ....(22.5 ozs.) 1 lb. 6.5 ozs.
No. 10: 6 3-16 by 7-inch sanitary ....(67.0 ozs.) 4 lbs. 3 ozs.

These weights refer only to relatively firm pears in halves. In the case of soft and broken halves they can and should be exceeded. If sugar is used as such instead of syrup in packing pears, the sugar should be added in such a manner as to cause no reduction in the amount of pears which could have been placed in the can in case syrup instead of sugar had been added.

The investigation indicates that properly filled cans of peas should, in general, yield the following drained weights of peas, the weights being determined in each instance by draining for two minutes on a 1/8-inch mesh screen:

No. 1: 2 11-16 by 4 inch sanitary, and hole and cap cans ....7.5 ounces
No. 2: 3 7-16 by 4 9-16 inch sanitary, and 3⅜ by 4 9-16 inch hole and cap.......13.5 ounces
No. 10: 6 3-16 by 7 inch sanitary, and 6¼ by 6¾ inch hole and cap (72 oz.) 4 lbs. 8 oz.

Properly filled cans of unpitted cherries should yield, at least, the following drained weights, these weights being determined in each instance by draining for two minutes on a 1/8-inch mesh screen:

No. 1 (fruit): 3 by 4 11-16 inch sanitary...........10.5 ounces
No. 2: 3 7-16 by 4 9-16 inch sanitary, and 3⅜ by 4 9-16 inch hole and cap—
Syrup cutting out 20 degrees Brix or above........12 ounces
Syrup cutting out below 20 degrees Brix...........13 ounces
No. 2½: 4 1-16 by 4 11-16 inch sanitary, and 4 by 4¾ inch hole and cap—
Syrup cutting out 20 degrees Brix, or above........................(18 ozs.) 1 lb. 2 ozs
Syrup cutting out below 20 degrees Brix, .(19 ozs.) 1 lb. 3 ozs.
No. 10: 6 3-16 by 7 inch sanitary, and 6¼ by 6¾ inch hole and cap—
Syrup cutting out 20 degrees Brix, or above.......................(68 ozs.) 4 lbs. 4 ozs.
Syrup cutting out below 20 degrees Brix. ....(72 ozs.) 4 lbs. 8 ozs.

Due allowance will be made in all cases for unavoidable variations in weight.

Investigations have shown that properly filled cans of sauer kraut should yield at least the following drained weights of sauer kraut, the weight being determined in each instance by draining for two minutes on a 1/8-inch mesh screen:

No. 2: 3 7-16 by 4 9-16 inch sanitary, and 3⅜ by 4 9-16 inch hole and cap.......................(16 ounces) 1 pound
No. 2½: 4 1-16 by 4 11-16 inch sanitary, and 4 by 4¾ inch hole and cap.................(23 ounces) 1 pound 7 ounces
No. 3: 4¼ by 4⅞ inch sanitary, and 4 3-16 by 4⅞ inch hole and cap...................(27 ounces) 1 pounds 11 ounces
No. 10: 6 3-16 by 7 inch sanitary and 6¼ by 6¾ inch hole and cap ......(80 ounces) 5 pounds

Properly filled cans of spinach, Swiss chard and beet tops should yield at least the following drained weights of spinach, the weight being determined in each instance by draining for two minutes on a 1/8-inch mesh screen:

No. 2: 3 7-16 by 4 9-16 inch sanitary, and 3⅜ by 4 9-16 inch hole and cap.........15 ounces

(Continued on page 32)

John Newman's New Duties

By ARJAY DAVIES, Pres. National Wholesale Grocers Association

AS the result of instructions of the Executive Committee at the convention last June, tending to divide with the president some of the duties and to promote closer relations between his office and the membership, to stimulate more interest in the activities of the association and in every way possible to help build up our organization, I have, by authority of such instruction of the Executive Committee, engaged the services, after consultation with a number of people, of Mr. John B. Newman, of Elgin, Ill., former Dairy and Food Commissioner of the State of Illinois, and up to the time of his resignation from that position, secretary of the Association of State Dairy, Food and Drug Officials.

Mr. Newman has been with us for a few weeks, making a visit to the offices of secretary, counsel and the office of the president, familiarizing himself with the work of the association, that he may be better posted to assume his new duties.

After the first of the year, Mr. Newman will start on his trips around the country, hoping to make a visit to every member of the association. He desires to meet you face to face, convey my greetings and tell you of some of our activities which you may not be familiar with, and to get from you ideas and suggestions that will be of benefit to the association in which we are all so much interested. Although Mr. Newman has been at our offices, as above mentioned, we want him to get all the information that he possibly can obtain from each and every one of you, that will enable him to better fill the position along the lines which the Executive Committee had in mind. He is the assistant to the president and the president is your servant, striving to win laurels for the association and endeavoring for greater accomplishments, so take Mr. Newman into your confidence; give him the glad hand, and discuss freely with him anything that you think of that is for the good of the association. He will discuss with you many problems that he has taken up with me, with our secretary and with counsel.

The following is a brief sketch of Mr. Newman's career:

He was born at Elgin, Ill. His father was in the grocery business for forty years and also in the creamery business in this great dairy center. Mr. Newman's father had him educated for the commercial world. He was sent to the University of Notre Dame to take a course in higher accounting and received the Degree of Master of Accounts. He spent some time in the large wholesale grocery house of Sprague-Warner & Co., serving in the department of our well-known friend, Mr. Chas. E. Wilcox. Here he came in contact with the many problems of wholesale distribution, which followed on the acquaintance he had received at home in the retail distribution. He was engaged for a while in making evaporated milk at the Elgin Condensed Milk Company. He then went to the University of Michigan and was graduated from the Law Department, receiving the degree of Bachelor of Laws. He then went into the general office of the John Newman Company at Elgin, which was, at that time, operating over fifty creameries. He represented his father for nine years on South Water street, Chicago, one of the busiest food markets in the world. Here Mr. Newman became acquainted with storage problems. It was on account of this training and experience, that he received an offer from the governor of the State of Illinois to become assistant dairy and food commissioner in 1909. He held that position five years when Governor Lowden appointed him head of the department. He continued as head of this department until he resigned to take up his duties with our association.

Some of the activities in the food world that have brought him into prominence were his work in connection with the Good Egg Law. Mr. Newman had a law passed, however, years ago, regulating traffic in eggs. The law has since been perfected and re-passed in Illinois and in most of the Missisippi Valley states. Mr. Newman was interested in having passed a cold storage law for the State of Illinois and in fact was on the committee of food officials who drafted the cold storage law in conjunction with Dr. Pennington of the Federal department. The law was passed in Illinois and was later endorsed by the Uniform Law Committee of the American Bar Association as a model Uniform Law. Laws similar to this are enforced in fourteen of the seventeen states having cold storage legislation and this cold storage law was the one used by the United States Food Administration. The egg regulations which Mr. Hoover, United States Food Administrator, put into effect were those that Mr. Newman had worked out for Illinois.

Several years ago Mr. Newman was the author of one of the first bulletins on the care of milk in the home. Several editions of this bulletin were issued and attracted a great deal of attention, and the department had calls for copies from distant places such as the University of London, from Africa and the Hawaiian Islands. A few years ago the National Holstein Friesian Association made a proposition to Mr. Newman to go with that organization, but Governor Lowden, who had just assumed office, persuaded Mr. Newman to stay in the state work and wrote the Holstein Association requesting Mr. Newman's release from the contract and increased the salary of the commissioner's position materially, so that he could afford to remain for a while in the state service. This spring Mr. Newman received a very flattering offer to take up certain food work in a foreign field, but did not care to leave this country, since he has two daughters to whom he desires to give an American education. It was just at this time that our association was in search of a man and a member of your executive committee, well acquainted with Mr. Newman, suggested him for this work.

A mingling of his experience with that of the individual member's experience will prove valuable to both, as well as to the membership as a whole.

The number of hogs on farms in Iowa at the beginning of this year 10,925,000, was exceeded in only five great nations before the European war. Germany had about 25,500,000 hogs, Brazil over 17,000,000 hogs, Austria-Hungary and the Russian empire each about 15,000,000 hogs, and China a number of unknown but huge proportions.

"Willingness to learn from experience—from the experience of others as well as his own—is characteristic of the man who has selling sense."

Peanut Oil

IN the United States there are three kinds of peanut oil on the market: virgin oil, crude oil and refined or neutralized oil.

Virgin peanut oil is made by pressing the kernels from the prime nuts without heating, making what is known as cold pressed oil. This oil is the highest quality of peanut oil, does not require refining or treating in any way and will keep longer than any other kind of peanut oil.

Crude peanut oil is made by first grinding the peanuts with or without the shells, then cooking same and pressing in a hydraulic press. This process makes a high acid oil and therefore has to be refined or neutralized. The product of this refining is known on the market as refined or neutralized oil.

Virgin or Cold Pressed Peanut Oil

The process of making virgin oil is as follows: First, it is necessary to use prime nuts. These nuts should not be shelled very long before pressing, as the oil in a shelled peanut soon becomes rancid. The shelled nuts should be passed over a picking table and any immature or bad nuts picked out. (There is no known process whereby nuts containing bad oil can be pressed and good oil obtained from them.) These hand-picked nuts are fed into a tempering apparatus without grinding, and warmed to a point not to exceed 120 degrees F. This is no warmer than the nuts get in the field in the sun, but is just warm enough to make the oil flow freely when pressed. The nuts pass from the tempering apparatus into the expeller, the oil pressed therefrom being the virgin oil. When the work is done properly, the cake should not contain over 8 per cent oil. This oil should not be allowed to go into settling tanks or troughs, but should be pumped immediately from the expeller into a filter press and be exposed to the air as little as possible before passing through the filter press. Care must also be taken that the pipes leading to the filter press pump be kept clean and sweet and no rancid oil allowed to accumulate therein. The expeller itself should also be frequently cleaned, for should the virgin oil come in contact with rancid oil, its acidity is increased. Glass-lined pipes and tanks are used by large producers making virgin oil. The main point to be borne in mind during the process of making virgin peanut oil is cleanliness.

As soon as the oil is filtered it is put into a storage tank (glass-lined, preferably), for about ten days or two weeks and then passed again through a filter press provided with filter paper, which removes the slight trace of moisture remaining in the oil. This oil should then be the highest grade peanut oil made and brings the highest market price.

Cold pressed oil is also made by grinding the whole nuts with the shells on and passing them through an expeller. If the nuts are good, this makes a very fine oil, suitable for culinary purposes without any other treatment than filtering. The oil, however, has a little stronger nut flavor than the virgin oil made from the shelled nuts, for as there are bound to be bad nuts with them, the acid will necessarily be a little higher. This oil can be neutralized for olea and other purposes with a very small refining loss.

Crude Peanut Oil

Crude peanut oil is made by grinding the nuts with or without the shells and pressing them in the ordinary cottonseed oil mill by the hydraulic process. This necessitates cooking the ground nuts for a considerable length of time at high temperature and then pressing in a plate or box press with the use of press cloths, the cooking of the peanut by this method and the handling through the hydraulic press makes a very much higher acid oil than is made by the cold process, while the yield of oil per pound of nuts is no more than by the cold process. However, the yield of usable or refined oil is from two to three gallons less per ton, due to the heavy refining loss. (The above figures are based on the use of good nuts.) It is almost impossible to make a low acid oil when press cloths are used, due to the fact that the oil soon becomes rancid on the press cloths, and as they are generally used over and over again without cleaning, the sweet oil is soon contaminated. The longer crude oil is kept, the higher the acid content becomes. On the other hand, virgin oil improves with age.

By the present method of refining and deodorizing, low grades of peanut oil can be neutralized, but these oils have not the keeping qualities of the virgin oil and can only be used in the manufacture of goods for immediate consumption, for if kept long on the merchants' shelves they become rancid and have to be returned.

Refined peanut oil does not have the characteristic flavor of the virgin oil that is so pleasing to the taste, as all refined oils taste alike, regardless of their source.

Up to 1914 very little peanut oil was made in this country, but since that time the industry has grown very rapidly. Increased interest is also being shown in the matter abroad.

Milk Popular for Lunches

Drink more milk—a healthful food as well as drink—is the slogan advocated in an educational campaign now being conducted by the Dairy Division of the United States Department of Agriculture. Lectures, demonstrations, charts and moving pictures are being used to teach the food value of milk and the work is carried to all classes and nationalities of people in all parts of the country. Recently in Bridgeport, Conn., two milk specialists in one day spoke before five meetings; two audiences were colored, one was Lithuanian, one Slavonic and one Greek and American mixed—1,600 people in all.

In a certain town in Illinois a factory employing 1,400 men has recently introduced the plan of permitting milk venders to go through the plant at 10 and 3 o'clock each day with sweet milk and buttermilk. Most of the men buy a pint each time. The foreman stated that since the drinking of milk has become so popular with the men not only is their efficiency improved, but they are more contented and even tempered.

Specialists are giving lectures in many large department stores, and explain that a glass of cool milk is not only refreshing on a hot day, but also furnishes a definite amount of nourishment.

"Horse Sense" applied to human beings means "common sense," but "horse sense" in the horse seems far beyond common sense in its surprising wisdom. The horse knows intuitively what is good for him. He is never at a loss to know what he should avoid. The horse judges wisely and eats what is proper for him to eat and what is best for him at that particular moment.

Methods for Detecting Decomposition in Catsup

Microscopic Count Method Used by Government Specialists in Testing Tomato Products

DECOMPOSITION in the materials used in the manufacture of catsup and other tomato products can be detected most readily and certainly in all cases by the Howard Microscopic Count Method, according to the specialists of the Bureau of Chemistry, United States Department of Agriculture, who examine samples from interstate shipments in the enforcement of the Federal Food and Drugs Act. Chemical tests, while sometimes satisfactory for detecting spoilage caused by bacteria in tomato products, are not always effective in detecting spoilage resulting from mold.

The Howard Microscopic Count Method has been used by the government specialists for over ten years and is used by many commercial chemists in testing tomato products and by practical catsup manufacturers in controlling the purity of their product. It has been the basis of action under the Federal Food and Drugs Act in hundreds of cases. The Government specialists state that a high mold count in tomato products invariably indicates a product made from decomposed or partly decomposed tomatoes. In all the examinations made by them high mold counts were never found in tomato products except where decayed materials had been used. The use of moldy tomatoes in the manufacture of catsup and similar products has been revealed by the mold count obtained by the Howard Method when no conclusive evidence could be detected by the usual methods of chemical analysis.

Several years ago considerable work was done by the specialists in the Bureau of Chemistry to develop effective chemical tests for determining spoilage in tomato products, and it was for some time supposed that the spoilage in tomato products could be detected by methods of chemical analysis. Later investigational work has shown, however, that spoilage caused by mold ordinarily can not be established conclusively by chemical analysis alone, but that such spoilage can be proved definitely by the Howard Microscopic Count Method. For this reason, say the specialists, the Microscopic Count Method is now the principal means used by them to detect spoilage in tomato products.

At a recent trial in the Federal Court in Chicago, based upon the seizure by the Government of several hundred cases of tomato catsup on the charge that it was made from partly decomposed tomatoes, as shown by the high mold count obtained by the Howard Microscopic Count, testimony was introduced by the Government to the effect that the mold count indicated the use of not less than 20 per cent of rotten tomatoes in the manufacture of the catsup. Testimony regarding the reliability of this method was given by the Government specialists, by commercial chemists and by a practical catsup manufacturer. The claimant of the seized catsup introduced the testimony of a commercial chemist who attacked the reliability of the Howard Microscopic Count Method, testifying that he obtained a lower mold count by a different method and that he was unable by chemical analysis to detect any spoilage in the catsup under seizure. The Government introduced chemists to testify that the ordinary chemical methods are not conclusive in the detection of spoilage due to mold. The Government specialists testified that molds do destroy the citric acid of the tomato, however, and that the figures submitted by the claimant, chemist showed that the citric acid in the seized catsup had been partly destroyed by the mold.

The claimant testified that extreme care was used in the elimination of rotten tomatoes. Employes of the factory where the seized catsup was made testified on the contrary that partly rotten tomatoes had been used by the claimant in the manufacture of catsup. According to their testimony, thorough sorting was impossible on account of the bad condition of the tomatoes, the rate at which they were dumped upon the sorting belt, and the excessively rapid rate of movement of the belt.

A practical catsup manufacturer who makes catsup on a large scale testified that he used the Howard Microscopic Count Method in controlling the purity of the output of his factory. He testified that whenever he found the counts running above normal in the operation of his factory an investigation always revealed that some decomposed material was getting into his product, either because the sorters were becoming careless in their work or because the tomatoes were dumped upon the sorting apron so rapidly as to make impossible efficient sorting. He further testified that when he found such a condition by feeding the tomatoes slower, or by putting on more sorters, the quality of the stock going into the cyclones was improved, and that such improvement was always reflected by a decrease in the microscopic count in the finished product. A commercial chemist testified that he used the Howard Microscopic Count Method daily in examining tomato products of commercial factories. It had been his experience that high mold counts obtained by this method always showed that partly decayed tomatoes had been used.

The Chicago case was tried before a jury. The verdict was favorable to the Government, the catsup being held to be adulterated as alleged in the libel.

Shipments of tomato products coming within the jurisdiction of the Federal Food and Drugs Act will be watched closely by food inspectors, say the officials. The Microscopic Count Method will be used in examining samples from such shipments and appropriate action under the Food and Drugs Act will be taken in all cases found to be in violation of the provisions of that act.

Bulletin 581, United States Department of Agriculture, entitled "Microscopical Studies on Tomato Products," explains fully the Howard Microscopic Count Method as used by the Government specialists. Copies of this bulletin may be obtained upon application to the United States Department of Agriculture, Washington, D. C.

"Get your happiness out of your work or you will never know what real happiness is."

Cutting Cooking Costs

MRS. A. LOUISE ANDREA Simplifies Cooking

MRS. ANDREA has a very optimistic view of the present "cook situation." And doleful as the present and future may look to the average housewife, she has a message for many women, a light to throw upon the subject which may shed a new radiance over hitherto much despised stoves, pots and pans.

"Women should rejoice that their cooks have gone!" Mrs. Andrea remarked. "Many a war romance was made over a cup of hot coffee and doughnuts, many a husband goes to business with a cheery heart after a breakfast of griddle cakes and returns at night with a most contented smile as he sniffs a wholesome dinner and realizes that he is neither to dine upon delicatessen food nor expected to take wifey out for their dinner. Personally, I believe that the cook book has as much to do with making couples happy as little Dan Cupid himself.

"Cooking is just as important in a woman's life as making money in a man's life. The woman who says she can't cook is just about as interesting as the man who announces he can't make a living."

"But it isn't a matter of 'can't cook' with most women; it is a case of 'won't cook'," I remarked. "Too many women dread the late night dinner, which keeps them from dressing for the evening and it is a matter of grease and dirty dishes at an hour when they would like to be conversing with their family. I don't believe the average woman dreads anything but this last straw part of it, the fact that she can't be dainty and sweet and take care of a roast or serve a big dinner."

"And the short cuts?"

"Well, to begin with, the woman who buys chops and steaks all the time doesn't appreciate the short cuts. Chops and steaks, aside from being the most expensive meats she can buy, require cooking at the eleventh hour. They cannot be prepared. They must be cooked at the last moment. The little lady who wishes to wear a crepe meteor gown under her bungalow apron never serves a meat she has to hang over as it sizzles on a pan. She has a roast, a chicken, a meat loaf or some meat which she can cook early in the morning and merely warm up at night. And it is the same way in preparing vegetables. Almost every vegetable can be cooked in the morning and merely heated up at night. Mayonnaise and sauces should be made in large quantities and always in the morning hours, when one is fresh and alert and has one's working clothes on.

"Cooking prepared in the morning, when a woman can make a business of it and is dressed appropriately to do it, is just fun, but when one is afraid of spattering and besmudging one's gown or face and has to do it at the end of the day, it is just plain drudgery. No wonder the woman who waits until the last moment to cook detests her job.

"Surely the average wife cannot make a great time over her breakfasts. Fruit, coffee and rolls are usually the only thing she prepares. Occasionally she boils an egg or makes some flapjacks, but on the whole, her breakfast is mere child's play. The Yankee breakfasts are ancient history. As to luncheon, that is usually a matter of 'pick-up' or 'left-overs' for herself or children. Therefore, the real meal that takes her attention is dinner, and if she is clever the hardest part of that is all prepared by noon. Her desserts, her soups, her salads and her meat can all be ready for her and need but a moment's attention. The woman who starts to get her dinner right after she does the breakfast dishes likes to cook, but the woman who puts off her dinner until about 5 in the afternoon and then dashes out to get a few chops or a steak weeps for her long-lost cook."

Mrs. Andrea has been experimenting with a little dehydrator for home use.

Mrs. Andrea has been working with dehydration for some years, both toward home work for housewives and for commercial possibilities, by tons a day. As she is regarded as the most practical expert on this subject, manufacturers have prevailed upon her to test their apparatus and run plants, etc., for they wanted her endorsement and advice. There are lots of driers, big and little—most of the big ones worthless, while as for the little home things, they were simply superimposed trays in boxes, lacking in just what is needed and essential for dehydration, and we had considered the home dehydrator as not possible when lo, a Connecticut Yankee went and did it. He brought his first and only model in a taxi to Mrs. Andrea's cooking school in New York, begging for a test and report. To her surprise—and pleasure—the thing worked perfectly. The man has achieved the presupposedly impossible, and with it we have dehydrated clams, oysters, fish, liver, meats, fruits and vegetables of all kinds.

At her earnest suggestion the inventor got his dehydrator patented, and now it is in process of being taken up for manufacture and distribution on a large scale, a delay being caused temporarily by the hideous cost of materials and labor. They are working on its construction now; i. e., trying to see how it can be made cheapest and yet reliable and wearable.

Among the specimens dehydrated are lots secured in Russia, Germany, Denmark, France, etc., and here is shown very forcibly and conclusively the difference between dried stuff and dehydrated stuff. Most people think they are the same, but that is the error which has "busted" many companies, disgusted housewives and kept dehydration back generally. But very soon it is going to rank with canning.

Alfred W. McCann has written several articles upon dehydration and upon hearing of Mrs. Andrea's work in this particular, called to see for himself. As a result of his call he published a signed article in the *N. Y. Globe,* April 22, 1919, in which he said:

"Mrs. Louise Andrea, who is looked upon even by the Government as the most expert food canner in America, if not in the world, probably knows more about dehydration than any living being. In spite of all her really artistic accomplishments in canning fruits, vegetables and animal foods—and she is celebrated for her achievements in these lines over two continents—she candidly admits that the very best of canned products in nowise compare with the properly dehydrated product of the same kind.

True to Type

Fair Customer—But the hairs are coming out of this muff.

The Salesman—That, Madam, is a peculiarity of the animal; it always sheds its fur at this time of the year.

The Food Value of Beans

BEANS and their food values have been preached to us so consistently for the past few months that we are in danger of stopping our ears to any more information on the subject. Nevertheless, the Food Administration continues to encourage the use of beans in the menu of all loyal housekeepers, with special attention to the newer or more unusual varieties.

Of bean varieties there are not a few, including pinto beans, French beans, kidney beans, lima beans, black beans, cow beans, the more frequently used navy beans, white beans and lastly, soy beans.

For the epicureans in food culture, for the travelers who delight in foreign dishes and new table stuffs, the soy bean should have many charms. It is more than a wheat saver, for it forms the basis for soups, meat loaves, souffles, or, when crushed, gives an oil that leaves a cake from which soy bean flour is ultimately obtained.

Whereas, we are only now beginning to experiment with this bean, it has been used in its various forms throughout China and Japan for some years and is grown in Asia, India and the Molucca Islands also. The Chinese make a sauce of the soy bean, which is very palatable served with rice and such starchy foods.

Just at this time, with wheat flour more available than it has been for some months, conservation rules with regard to the mixing of flours and the use of cereal flours are likely to be disregarded. Therein lies a danger. The habit of experimentation which has led to so many valuable discoveries in and around the kitchen, must be continued and made a national, indeed, an international custom.

Purees, thick soups, which we get from France, are a welcome addition to a light meal. They give substance to a dinner and can be used as a luncheon dish with bread and butter sandwiches. The soy bean is at its best when used in this way.

In preparing soy beans for use they should always be allowed to soak for at least twelve hours before mixing with other ingredients. They are usually then strained, if the soup is to be a heavy one. Straining mashes them to a pulp and this pulp gives body to the dish.

A cream soup of soy beans is also good, and is made much as all cream soups are. Onion is browned in fat, corn flour forms the thickening, the milk and bean pulp are added, and the mixture is allowed to come to a boil. After one minute the soup is seasoned and ready to serve.

If the housewife wishes to save her milk, although she reduces the nourishment thereby, a good soup may be made by adding water in place of milk and straining the soup into plates garnished with thin slices of lemon and hard-boiled egg.

Combined with lima beans, with kaffir corn or with tomatoes, the soy bean makes a wholesome meat substitute. All four may be combined if desired, or any two or three. Salt and pepper should be added, and enough water to make one pint of soup. Conservation flour may or may not be used for thickening, since only a small amount is required. A tablespoonful of canned corn added to any of these soups gives a pleasant flavor. The various ingredients may be used in any amounts the individual prefers.

Soy bean flour is now being manufactured in southern cottonseed mills, after the regular season is over. This is at the request of the Government, so that an increased supply may be put on the market. One slice of bread made of this flour (30 per cent soy bean flour and 70 per cent wheat flour) is equal in food value, the Government tells us, to a beefsteak sandwich made of all wheat flour.

Recipes made of this so-called "high-powered" flour need little or no fat. Used in making hot or quick breads, biscuits, muffins, griddle cakes, yeast bread, mush, croquettes, meat loaves and omelets, soy bean flour proves equally satisfactory.

Thinks Milk Will Be Lower in Price

"Recovery from the lower prices in the milk market, as a result in the slump of foreign exchange, will be slow and will be in proportion only as the domestic market is developed to take up the slack brought about by the heavy decline in export business," says J. F. Montgomery, managing director of the Nestle's Food Company of New York City, who has just made an ocean to ocean inspection tour of the company's properties and a survey of the manufacturing milk industry generally.

Mr. Montgomery believes that the lower prices in milk will extend to a number of other basic foodstuffs, because milk is a fundamental food and in large measures can replace meat and other high-priced articles of the diet. Hope of the milk industry, Mr. Montgomery says, is the development of domestic trade which has been neglected during the war.

"The field for domestic consumption scarcely has been scratched," says Mr. Montgomery, "and the recent collapse in foreign exchange, which is bringing about a decided restriction in export business makes this at once the logical and most profitable avenue for successful business enterprise among the milk manufacturers in the United States.

"The consuming public welcomes the lower prices, but the business man will realize that manufacturers can not long produce at a loss and remain in business, and if they remain in business at lower prices, they must be able to buy at lower figures, which means a downward tendency in prices paid to labor and to farmers and other producers.

"Throughout the east the production of milk and its manufacture into condensed and evaporated forms was tremendously stimulated by the war. The Pacific coast could not avail itself of any considerable amount of export business and consequently did not develop its milk resources. The milk world, therefore, finds itself with a surplus no longer available for export and the Pacific coast states constitute the logical outlet.

"It is a matter of history that all recent wars have stimulated the consumption of tinned milk. As the standard milk in the army, men come to learn and prefer its flavor. As a result it goes into thousands of homes which had not used it.

"This temporary slump in the export trade of milk will be a blessing to the American manufacturer if it brings to his attention the rich undeveloped market in his own country."

Some tired feelings are caused by laziness, but well people are seldom lazy.

If you feel "too tired" to study try a deep breath.

Millions Lost by Food Delay

Waste by decay of imported and domestic food products is so great that, according to conservative estimates, in one year in the port of New York alone it equals the amount necessary to feed the entire population of this city for one month. E. L. Goodsell of the Fruit Auction Company said at a food conference held at Columbia University under the joint auspices of the university's department of agriculture and the Institute of Arts and Sciences. This loss he attributed to lack of proper transportation, which he said cost the producers of the island of Porto Rico $1,000,000 annually.

"From California, Florida, Cuba, Spain and Italy," he said, "the waste can easily be proved to exceed $50,000,000 annually. Ninety per cent of this can easily be conserved.

These losses could be done away with if refrigerated ships and sufficient rolling stock with refrigerated equipment were furnished. A faster schedule for transporting food and perishables on land must be established. Waterway commerce for delivering domestic food products to all seaboard ports must be developed."

Mr. Goodsell said production must be increased. To make this possible, he said, the Government of every country should subsidize the producers by a per ton subsidy based on each producer's increase over previous acreage cultivation. Mr. Goodsell thought a per capita tax levy on consumers would be a practical way of providing subsidies.

The conference was held in Havemeyer Hall, and was called by Prof. O. S. Morgan, head of the Columbia Department of Agriculture, who presided. Other speakers included Abram I. Elkus, Mrs. Elmer Blair, ex-president of the New York Federation of Women's Clubs; Seth J. T. Bush, secretary of the New York Federation of Agriculture, and Mrs. N. D. Hitchcock.

Prof. Morgan advocated an impartial and comprehensive survey of the city's food problem, and said that soon there would be devised "a farmers'-middlemen-consumers' programme which would make of each man of each factor therein alive with the sense of being an essential part of a sound public service." This service, he said, need not necessarily be operated by the public.

Prof. Morgan asserted that some middlemen submit most unwillingly to investigation, while the farmers' business is an open book.

"The ultimate fact," he continued, "is that we must have the essential, if not the whole truth about each middleman factor. When we have these basic facts an efficient plan can be put into operation. It is plain that we must get not 100 per cent honesty in every factor, but a controlling honesty in a majority all along the line."

Mrs. Blair asserted that 216,000 of the children in the public schools of New York, according to an estimate by the Board of Health, are victims of under nourishment.

"It is the need of purchasing the proper food in sufficient quantity for the growing boys and girls of the family, of whom so many are suffering from undernourishment, that is causing the greatest anxiety," Mrs. Blair added. "Many a mother feels her growing child attending school needs a chop for the noonday meal, and chops may be out of her financial reach.

"Every mother should know that meat is not a necessity in the opinion of many well-known authorities, but that peas, beans, dried fruits, and, above all, plenty of good milk, have equal, if not more, value as a ration.

"The milk situation seems the most pressing because it so vitally affects the children. I feel that the city should be zoned for distribution with a great saving of expense. I also believe there is much to be looked for in the way of relief from the commercial perfecting of the dried milk proposition."

Mrs. Blair said the 3,000,000 members of the General Federation of Women's Clubs were ready to support plans that may result from Columbia gathering.

The steady rise in prices, she asserted, was causing grave concern to parents because of physical deterioration of children. Six million school children in this country, she said, are under weight, "a pretty sure indication of malnutrition."

Relative Food Values of Whole-Wheat, Graham, and White Flours

According to Hutchison's "Food and the Principles of Dietetics," the amount of heat which a food is capable of yielding on complete combustion may be taken as a measure of its value as a source of energy, since heat and work are convertible terms. For measuring the heat value of foods, therefore, the "calorie" is employed—that is, the amount of heat required to raise one pound of water 4° Fahr. (or 1 litre of water 1°C.) Using this method of measurement, the heat value of 1 gramme (15½ grains) of each of the three chief nutritive constituents of food when taken into the tissues is given as follows:

Protein (one gramme) .4.1 Calories
Carbohydrates (one gramme) .....4.1 "
Fat (one gramme)....9.1 Calories

Pope and Carpenter, in their "Essentials of Dietetics," give the following table showing the amount of organic food constituents in one ounce (30 grams) of the various flours, with their fuel value expressed in calories:

	Protein Grams.	Fat Grams.	Carbohydrates Grams.	Calories
Entire wheat flour	4.14	.57	21.57	107
Gluten flour	4.26	.54	21.33	107
Graham flour	3.99	.60	21.42	108
Bakers' grade flour	3.99	.45	21.81	107

Or, the various percentages of these three essentials in the same flours are as follows:

	Protein per cent	Fat per cent	Carbohydrates per cent	Calories
Entire wheat flour	13.8	1.9	71.9	107
Gluten flour	14.2	1.8	71.1	107
Graham flour	13.3	2.2	71.4	108
Bakers' grade flour	13.3	1.5	72.7	107

An Illinois grocer uses the following advertisement on the reverse side of his sales slips and which is a timely reminder to his customers:

You need your money
And I need mine.
If we both get ours
It will sure be fine,
But if you get yours
And hold mine, too,
What in the world
Am I going to do?
Think it over!

Co-operative Campaign to Educate Public to Advantages of Milk

THERE is a sound economic principle underlying most co-operative advertising eampaigns in that they promote the consumption of the product and increase the total business for all instead of merely transferring it from one eoneern to another. So we have our co-operative campaigns for lumber and building brick, and cement, and bread, and automobile wheels, and tombstones, and other things too numerous to mention. Sometimes they are national, sometimes local. But few can be found whieh have not proved a paying venture.

It might seem that a staple, basie food like milk would hardly need its good points advertised, nor that its consumption could be materially increased. But both are being done in the Boston milk campaign. It is not the first time that milk has been eo-operatively advertised, but the present campaign is most elaborate and eomprehensive. One hundred and twenty-five thousand dollars a year is being invested, and this is to be continued indefinitely.

There is a peeuliar twist to this campaign that makes it "different." While it is being finaneed by the producers shipping into Boston and their distributors, neither their name nor that of any organization with which they are associated appears. The advertising is signed by a combination of Governmental and civic bodies, among whieh are: U. S. Department of Agriculture, Massachusetts Agricultural College, Massachusetts State Department of Agriculture, Boston Board of Health, Boston Chamber of Commerce, National Civic Federation, Women's Municipal League, Boston Social Union, Boston Commission for Public Service, Dietetic League for Preventive Work and several others. Professor D. L. James of the Massachusetts Agricultural College is director.

This helps to break down the usual resistance to a selling appeal. It is made possible by reason of the fact that the propaganda was originated by the Dairy Division of the U. S. Department of Agrieulture, which has been operating brief educational campaigns in various parts of the country. Its purpose is primarily, of eourse, the benefiting of the public; for in all parts of the eountry statistics showed that increased cost was causing a drop in the per capita consumption—children were being deprived of their most essential food. In addition the department was interested to increase demand to meet production, that farmers might not be compelled to sell off their cows.

When the proposition was started by the federal department, the milk dealers immediately co-operated, and when Government activities ceased, they carried on. There are 15,000 produeers shipping into Boston. These contribute a small assessment based on quantity, which fund is matehed by the distributors.

Broad Basis of Advertising

This is not Boston's first experienee in advertising to inerease milk consumption, for in the spring of 1918 some of the produeers and distributors got together and invested approximately $10,000 in a campaign covering two months.

The present campaign has been running since June. A three-fold result is expected: First is the benefit to the consumer, whieh has already been mentioned and whieh is basically the reason for the campaign in its present form. Second is inereased earnings for the producers, many of whom are small farmers and who, by encouraged production, will be induced to adopt more businesslike and systematic methods. The priee received by the produeer, too, depends upon the percentage which is sold to the consumer as fluid milk compared with the proportion which has to be sold for industrial and other purposes at lower prices. Thus, if the total quantity of milk shipped to market exceeds the consumption, the surplus is turned to other uses and the farmer suffers as well as the distributor. By increasing the consumption to take care of the supply, the milk producer will receive a better price. Third, the distributors will benefit by increased sale without proportionate increase in overhead, with a tendency to lower the retail price.

It is a campaign, in other words, in which everybody benefits; which ought to prove a sound foundation.

The backbone of the educational work is newspaper advertising and car cards. The newspaper campaign is running on frequent schedule, 120 lines by three columns. The advertissments are called "Healthgrams" and "Thriftgrams," according to the type of copy. Supplementing these are posters and lectures to women's clubs, civic bodies, schools, factories and institutions, by a corps of six food experts, together with various exhibits. Then there are circulars in three languages, distributed to the foreign-born children through the schools.

A novelty whieh is one of the features of the school work, is a play entitled "Milk Fairies," whieh has proved so interesting that it has been requested all over the country. The play is a story in elementary form in which the sugar, the fat, the protein, the minerals, the vitamines, the calories and other elements in milk are represented by sprightly fairies, who, visiting in his dreams a frail lad refusing to drink his daily portion of milk, explain to him in song and dance the vital part which they play in upbuilding the human body. They show Johnnie, whose ambition is to be a soldier, how it is necessary for him that he drink a great deal of the precious fluid if he is to develop a strong physique and meet with the approval of Uncle Sam. The play gets over the message very effectively to the children, and incidentally to their parents.

It is upon the child angle that the campaign is at present concentrated; for as explained, the inereased cost has cut down the consumption and investigation shows that mothers are feeding less milk to the children.

Many other cities are making inquiry in regard to the campaign and great interest is being displayed all over the country. The Boston campaign covers an area within thirty miles of Boston, but separate campaigns have already been started in Worcester, Springfield and Brockton, upon request of civic associations of those cities and in co-operation with the milk representatives, located in their territories.—Printer's Ink.

For Easter

STAR HAM

"The Ham What Am"

and Remember

STAR BACON

"The Quality Never Varies"

THERE'S no meat so appetizingly good as ARMOUR'S STAR HAM. Smoked and sold in the famous Stockinet Covering which retains all of the original, delicious STAR flavor and the rich sweet juices that make it a universal favorite.

Look for the Blue and Yellow Armour Oval Label on the Stockinet Covering.

ARMOUR AND COMPANY
CHICAGO

Water Sold at 90 Cents a Pound

Several shipments of butter have been seized recently under the Federal Food and Drugs Act on the charge that the butter contained too much water or salt and too little milk fat, according to the officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of that act. The sale of water and salt at the price of butter is not only a fraud upon the consumer and an unnecessary burden in these items of high prices, but is demoralizing to the butter industry, the officials claim.

The standard for butter which is used as a guide by the Federal and most of the State and city food officials requires that butter shall contain not less than 82.5 per cent milk fat. This leaves 17.5 per cent for salts, coloring matter and moisture. On the average something less than 16 per cent will represent moisture. Butter that contains appreciable quantities of water above 16 per cent contains excess water and necessarily has less milk fat than the standard requires.

The Federal officials do not recommend seizure when the butter contains as much as 80 per cent milk fat and is otherwise in accordance with the law. All the butter that has been seized under the Federal Food and Drugs Act contained less than 80 per cent milk fat, and a proportionately high percentage of water.

Hurts Honest Manufacturers

The adulteration by a comparatively few manufacturers of such high priced food as butter with water, which costs them nothing, places the great body of honest manufacturers at a disadvantage in competing in price to the wholesale trade. The man who puts excess water in his butter can cut the price to the dealer sufficiently to get the business and still make more than a fair profit. The cut price, however, seldom reaches the consumer, since the additional water is not apparent and the butter usually is sold for the regular market price. The manufacturer and the dealer thus divide between them the profit on water sold at from 50 to 90 cents a pound, which on the whole is quite profitable. The dealer does not always know that the butter contains too much water and too little butter fat. He quite naturally prefers to buy butter that appears to be good and which is offered to him at a few cents lower than he can buy it elsewhere, since he can sell it for the full market price.

Execss water in butter results usually either from lack of care and facilities for controlling it, or from a deliberate intention to put in as much water as the traffic will bear. In either case the consumer pays butter prices for the added water.

Official Standard for Butter

The test of the official standard for butter follows: "Butter is the clean, nonrancid product made by gathering in any manner the fat of fresh or ripened milk or cream into a mass, which also contains a small portion of the other milk constituents, with or without salt, and contains not less than eighty-two and five-tenths per cent (82.5%) of milk fat. By acts of Congress approved August 2, 1886, and May 9, 1902, butter may also contain added coloring matter."

Butter shipped within the jurisdiction of the Federal Food and Drugs Act and containing too much water and too little milk fat is liable to seizure.

High Cost of Living Studied by Scientists

Data prepared by vital economics department expeeted to be used by research council—scientists of note serving ou committee.

The organization of a special committee of the National Research Council to investigate problems which have bearing upon the eost of living, through the eeonomic productiou and use of foods, is of particular interest. Dr. John R. Murlin, professor of physiology and director of the Department of Economics of the University of Rochester, is active in this work.

During the war, Colonel Murlin was director of foods and nutrition for the medical department of the army, having supervisory charge of the diet of the army both in this country and abroad. Last May, before he left the service, he was asked by the authorities in Washington to organize a committee which might properly investigate the various scientific aspects of the great national food and eost question. A preliminary meeting was held in New York in July, when a tentative program was discussed and another and more largely attended meeting was held in Washington on October 24th. The committee still is at work upon the elaboration of its program, and it is expected that the definite problems before it soon will be tackled.

Will Establish Fund

At present, one of the prineipal tasks the committee has in view is the establishment of a fund with which to carry on its work. It is anticipated that some of the larger producers of food products will be suffieiently interested in the proposed work of pointing out to the people at large the relative values of various foods to contribute to the support of a central organization whieh aims to carry on these investigational labors.

An interesting feature of the committee's plans is its announced intention of making use of certain specific investigations already formulated by individual members of the committee. This carries with it the likelihood that the research work which is being carried on by the University of Rochester's Department of Vital Economics, may be nationally utilized through the preparation of the data it obtains for the national committee.

The Department of Vital Economics is at present occupied with investigations into the nutritive value of various common foods, and Dr. Murlin considers it probable that the committee may be able to utilize some of the data thus obtained in formulating conclusions on certain aspects of the subject of nutrition which offer the possibility for an improvement in the quality of nutrition or for any possible eeonomie gain toward reducing the cost of living.

Notable Committee of Fourteen

The committee that Dr. Murlin organized is composed of fourteen of the best known men and women in the country in the particular lines of endeavor they represent. Dr. Carl Alsberg, for instance, chief of the Bureau of Chemistry, Department of Agriculture; Dr. H. P. Armsby, director of the Institute of Animal Nutrition, Pennsylvania State College, is a well-known authority on the physiology of domestic animals and the conversion of animal foods into foods for human consumption.

Professor Isabel Bevier, director of the Department of Home Economics, University of Illinois, is a well-known authority on the subject of the economic use of foods from the standpoint of the housekeeper. She has just completed a study involving the feeding of college girls in a system of ten sorority, church and co-operative homes, date from which show that the cost of feeding each girl for one day ranged from 37 to 55 cents and averaged 40 cents and that the average energy content of the day's food was 2,419 calories.

Geneva Man a Member

Dr. E. B. Forbes, chief of the department of nutrition, Ohio Agricultural Experiment Station, has studied especially the relation of mineral substances to animals, such as the relation of fertilizers to the feed of animals and the relation of feed to the chemical composition of animals.

Dr. W. H. Jordan, director of the New York State Agricultural Station at Geneva, is the author of a well-known book called "Principles of Nutrition," and as director of the experiment station at Geneva he has become familiar with problems of animal husbandry and crop production.

Dr. Graham Lusk, professor of physiology in the Cornell University Medical College, is the author of a book entitled "The Science of Nutrition," and is an expert especially in the field dealing with the energy requirements of man.

To Broaden Extension Work

Dr. C. F. Langworthy, chief of the office of home economics, Department of Agriculture, is said to have had more to do than anyone else with the extension work of the government in the field of household economics especially in rural communities. It is the intention of the national committee to bring this sort of extension work into the cities, which is a new field.

Dr. E. V. McCollum, professor of bio-chemistry of the School of Public Health and Hygiene, Johns Hopkins University, is one of the best known authorities on the subject of vitamines. Dr. L. B. Mendel, professor of physiological chemistry at Yale University, has done work along similar lines, as well as much researeh work on the value of different proteins.

Dr. R. A. Pearson, president of Iowa State Agricultural College, is an authority on animal husbandry and is in close touch with agricultural problems in general.

Dr. H. C. Sherman, professor of food chemistry at Columbia University, is the author of a college textbook on the subject of the chemistry of nutrition as well as of a number of published researches on the acid-base balance of dietaries.

Dr. A. E. Taylor, professor of physiological chemistry at the University of Pennsylvania, is the man who, through the war, supplemented with scientific knowledge Herbert Hoover's administrative genius. He investigated food conditions in Europe before Hoover did and is said to know as much as anyone about food conditions in various countries.

Dr. A. F. Woods, president of Marylaud State College of Agriculture, served during the war as chairman of a committee on biology and agriculture in the National Researeh Council. He also is an agricultural botanist and is said to be well acquainted with the legislative problems concerning the production of foods.

Dr. E. F. Ladd, Food Commissioner of North Dakota and national authority on food, in a recent magazine article, says: "Because of the scarcity of milk in this country, it is imperative that we make the most of the supply we have, that we put to the best possible use all the skimmed milk not absolutely necessary for the feeding of young animals—which should be converted into human food in the form of cottage cheese, milk powder, or else in its raw state combined with vegetable fats for cooking purposes."

HEBE

—an auxiliary to the family milk supply for cooking and baking.

The HEBE Company has for some time been doing what Dr. Ladd advocates. The product HEBE is produced, advertised and sold as a valuable addition to the housewife's cooking aids. As such it is an important factor in increasing the country's food supply, and one means of remedying the milk conditions to which Dr. Ladd refers.

HEBE is a scientific combination of pure skimmed milk and highly refined cocoanut fat. Extreme sanitary care is exercised throughout the production of HEBE, from the selection of the ingredients to the final sterilization in hermetically sealed cans.

The label tells plainly what HEBE is—"A Compound of Evaporated Skimmed Milk and Vegetable Fat." It is recommended for cooking and baking and for use in hot beverages. It is not intended to be used in place of whole milk for infant feeding.

Our booklet—"HEBE—Its Dietetic and Economic Value"—will gladly be sent upon request. Address 2309 Consumers Bldg., Chicago.

CHICAGO **THE HEBE COMPANY** *SEATTLE*

The Cocoanut Shredding Industry

THE shell of a cocoanut may be a hard one to crack, but it is not too hard to be utilized in the close economy practised by manufacturers of prepared cocoanut, in these days when food products are more nearly the medium of world exchange than gold. From the time the nut leaves the tree until it is boxed and sealed and ready for delivery to your grocer, no materials, and few motions, are lost.

The cocoanuts handled by a large manufacturing company having factories in Brooklyn, Newark and Philadelphia come from Porto Rico, Jamaica and Trinidad. Those coming from groves owned and managed by the firm are carried in bottoms belonging to it; those purchased from planters come by regular steamship lines. All those intended for the Brooklyn plant are unloaded directly on its wharf. An occasional schooner load, with the nuts loose in her hold, is also bagged there, but the bulk of the raw material is received in large burlap bags, convenient for handling.

Carried to the top of the building by elevator, the surplus stock is stored in the "nut room," to be fed thence to a chain of machines, chutes and operating tables, where it is converted into plain and fancy cake trimmings, soap oil and cattle feed. Nothing is lost save what visitors eat by way of sampling the product. This is no inconsiderable percentage in these days of under-nourished brain workers of the white collar class prescribed by the Bolshevists.

The housewife who laboriously prepares a cocoanut in her kitchen thinks of the task as a simple process, rather hazardous to knuckles. The manufacturer who thinks of cocoanuts in terms of thousands of pounds divides the operation into a surprising number of specialized processes, each one performed in a highly efficient manner by a group of workers or a special machine.

The First Process

In the Brooklyn factory the nuts are first of all steamed to reduce, if possible, their natural hardness. They are next milked. This is accomplished by holding the "eye" of the nut against a revolving drill and allowing the milk to drain into a trough, to be utilized in a later stage of the process. The emptied shells then are passed to the opening department, where men working before wooden benches with a back-stop against which to brace the nut split off the outer shell. From the vigorous way in which they crack the nuts and the backfire of noise returned by the nuts the visitor might judge that the steaming had made little impression. From this department the shells are carried to the engine rooms of the building to be used as fuel.

The nuts still coated with brown fibrous skins pass on to a group of women workers, who with knives built on the principle of a safety razor shave off this coating and toss the nuts, now snowy white, upon a moving belt which carries them to the sorters and inspectors. The skins or parings meanwhile are gathered up and thrown upon a drier which, when they are free from moisture, drops them through the floor into the oil room.

From the presses they come out in the form of oil and a dry meal. The oil is filtered and barrelled or put up in metal drums to be sold to the soap manufacturers. The meal is valued as a feed for cattle and is sold for that purpose. Much oil is also made from copra in the Newark factory of this company, copra being cocoanut opened and sun-dried in the tropics.

Now to the "Picking" Girls

The real meat of the cocoanut is borne on a moving apron from the picking girls to the shred mills, and there is cut into shreds, chunks or slices to meet the requirements of various cake and candy manufacturers who buy the product in bulk. From the shredders the product, which now has assumed the form of snowy mounds, passes to the sugar kettles or direct to the driers or to the canning room. In no instance is it handled again by human hands. The tool for moving large bulks of it is a bright and shining scoop.

That part designed for canning is carried automatically to the fillers, which weigh and pack it in small tin cans. The fillers drop into place from a spiral chute, fill the cans with the now heated milk of the nuts, clamp on the air tight caps and drop the cans into round iron crates. These crates are hoisted into a retort in which the sealed tins of cocoanut are steam processed. They are cooled in a second vat and hoisted, still in the iron crate, to the packing room. Here they are stored. The labelling, packing and nailing up is done as in hundreds of factories, mostly by machinery.

Under ordinary conditions the cocoanut that is to be sweetened is put into copper kettles, holding about 400 pounds. Melted sugar is poured over it and the product is whirled around until every particle of cocoanut has its equal share of sweetening.

No Sweetened Stuff Now

At present the shining brass linings of the kettles are guiltless of sugar or cocoanut because of the sugar shortage, which forces the company to put out only its unsugared brands.

Except the canned variety, all brands must pass through the driers. The visitor is informed that perfect drying is absolutely necessary to prevent the cocoanut's spoiling. The number of times it must pass through the driers depends upon the fineness of the cut and upon atmospheric conditions.

It is the business of the drying room foreman to determine the length of the process. The drier of necessity breaks and crumbles the cocoanut, especially that which is shredded. This seeming disadvantage is capitalized through the agency of a sieve which sends the brittle shreds into long oscillating trays whose bottoms are formed of netting of graded fineness. The catch of each is carried in a separate chute to the packing rooms. The finest of all is known to the trade as "macaroons," presumably because of its intimate connection with that form of cake.

A still further process is applied to a part of the product in a giant oven which bakes or toasts it to a cinnamon brown—a bin of it looks not unlike a pile of sawdust.—Courtesy, *The Evening Sun*.

The Conscientious Scot

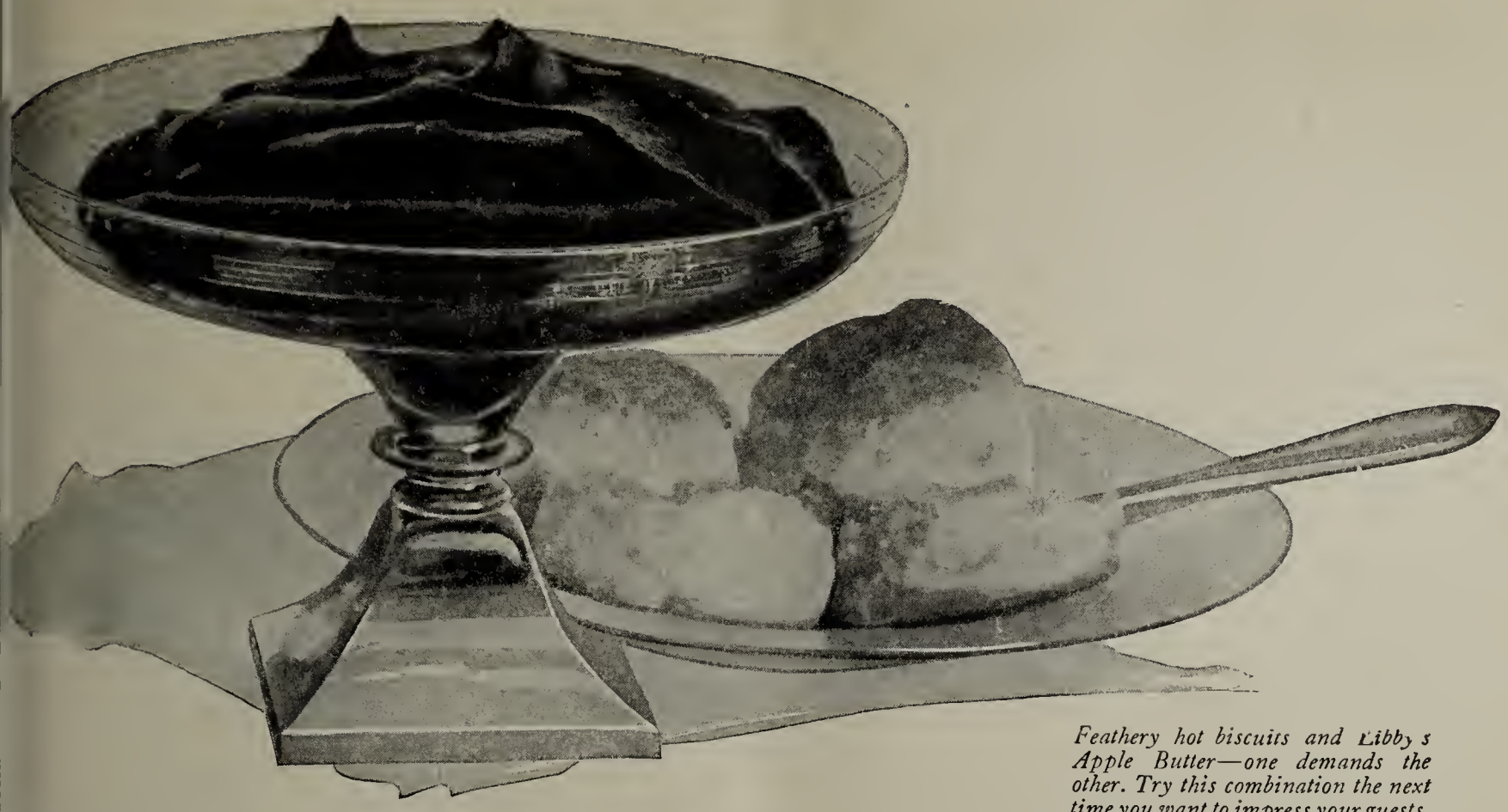
"An enterprising drummer," says a New York business man, "once attempted to bribe an old Scotch merchant by offering him a box of cigars.

"'Na, na,' said the old chap, shaking his head gravely, 'I canna' tak' 'em.'

"'Nonsense,' said the drummer. 'If you have any conscientious scruples you may pay me a quarter for the box.'

"'Weel, weel,' said the old Scot, 'I'll tak' two boxes.'"—*Ex.*

As nothing comes from nothing, anything can come from anything—do something!



Feathery hot biscuits and Libby's Apple Butter—one demands the other. Try this combination the next time you want to impress your guests. And try Libby's Apple Butter in place of jam, jelly or marmalade—it's a whole year 'round favorite

Hot biscuits and apple butter!

A real breakfast joy

WHAT a treat to start the day with—golden brown biscuits, piping hot from the oven, and Libby's Apple Butter! Just the thought of it makes one hungry.

Spicily sweet, with the tang of cider, the fragrance of apple—you've got to taste Libby's Apple Butter to realize how exceptionally good it is.

Apples brimming with tart juices—pungent spices from the far-off Orient—cane sugar and sparkling cider—all blended together with Libby's consummate skill into this rich conserve.

Hot biscuits and apple butter is just one of many tempting breakfast combinations—try Libby's Apple Butter with toast, waffles, corn bread or pancakes—see how wonderfully different it makes them all.

And if you like it for breakfast you will find it equally ready to brighten the flavoring of lunch or dinner dishes. Use it as a filling for tarts, or cookies—see what a fresh, spicy flavor it will give a pie.

Today—tell your grocer to send you this package of many possibilities—Libby's Apple Butter. He has it or will get it for you.

Libby, McNeill & Libby, 63 Welfare Bldg., Chicago

Libby, McNeill & Libby of Can., Ltd.
45 E. Front Street, Toronto, Ont., Can.

Libby's

What Pennsylvania Is Doing

THE first year of the administration of Governor William C. Sproul as chief executive of the Commonwealth of Pennsylvania broke all records in the Bureau of Foods of the Pennsylvania Department of Agriculture. The annual report for 1919, submitted by Secretary Fred Rasmussen of the Department of Agriculture by Director James Foust, shows that this Bureau collected more than half a million dollars in licenses. The activities of the Food Bureau have grown by leaps and bounds since 1907, when Director Foust's report shows that the receipts of the Bureau were $55,732.63. It was not until last year, however, that the half million mark was reached.

The business has increased steadily in volume from year to year, with the result that last year was a record breaker along all the lines of its activity. The receipts from all sources during the year were $541,487.37, but in this connection it is interesting to note that only a very small portion of this large sum was collected in the form of fines. Oleomargarine licenses netted $515,967.37, cold storage licenses $3,600, egg opening establishment licenses $1,300, and renovated butter licenses $600.00, a total of $521,467.37, leaving the receipts from fines but $20,020.00.

With comparatively few exceptions the fines were imposed for local violations. The enforcement of the laws during the previous years had already brought about the breaking up of wholesale fraud and adulterations of staple prepared foodstuffs and the fines imposed in connection with this class of goods are negligible in number.

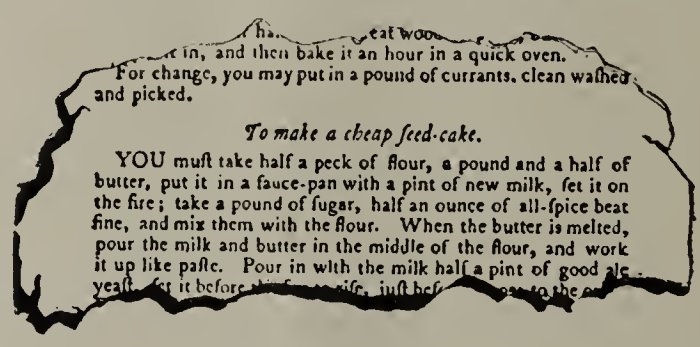
Director Foust was first appointed to his present position by Governor Stuart in 1907. At that time 30 per cent of all prepared foodstuffs on the market was adulterated; now adulterations are rarely found and the prosecutions are chiefly directed against local violators selling such articles as ice cream, milk, vinegar, sausage and other meats, and against cold storage products.

During 1919 samples collected by the agents and analyzed by the chemists of the Bureau totaled 6,851, while the grand total for thirteen years is 91,512. Cases terminated last year amounted to 1,007 and for thirteen years 12,108.

During the first two years of Mr. Foust's administration the Bureau was not self-sustaining; now the receipts are more than six times the amount of the expenditures, the former being $541,487.37 for the last year and the latter $87,961.92. In the thirteen-year period the receipts have aggregated $2,950,445.26 and the expenses have been $1,040,287.83. The receipts are deposited with the State Treasurer for the use of the commonwealth and the expenditures are provided for by appropriation.

The laws placed under the Director of the Bureau of Foods for enforcement are police regulations—nothing more, nothing less. The quality and quantity of food for eight millions of people are important and to keep the food pure and free from adulterations and to prevent misbranding is essential. This is the work of the Director of the Bureau of Foods.

From 1907 to 1919, inclusive, 91.512 samples were analyzed; 12.108 cases terminated. the receipts being 2,950,445.26 at an expenditure of 1,040,287.83.



A "CHEAP" CAKE

What fascinating reading there is in the old cook-books! Their calm way of ordering "a pound and a half of butter" for a *cheap* seed-cake! And how queer it sounds now to read of "ale yeast" to make a cake rise!

The housewives of that day never knew the wonderful convenience and time-saving of baking powder; they did not have the advantage of the scientific accuracy and reliability of Ryzon, the Perfect Baking Powder. Ryzon is the latest chapter in the interesting history of leavening. With it and the work of the domestic science experts, the progress of baking has made big strides toward better and more wholesome living.

Ryzon is packed in 5 pound tins, 6 to a case, for hotel and institution use. And the price is right!

GENERAL CHEMICAL CO.
FOOD DEPARTMENT
NEW YORK

RYZON
THE PERFECT BAKING POWDER

The Ryzon level measure

Few Gifts of Nature Have Proved More Useful to Mankind Than Corn— King of American Cereals

CORN STARCH—edible, laundry, or lump, has grown to be a household necessity.

CORN OIL—most wholesome as a salad oil, emphasizing the flavor of the salad. For shortening, frying, and the myriad of uses in the kitchen. **Corn Oil** has made a distinct place in the home.

CORN SUGAR—has its place with the ice-cream manufacturer, the physician and the baker.

CORN SYRUP—a wholesome, popular priced sweet, gives the home a pure, nutritious food.

American Manufacturers' Association of Products from Corn

208 South La Salle Street **CHICAGO, ILLINOIS**

MEMBERS:

American Maize Products Co., 135 William St., New York
Clinton Sugar Refining Co., Clinton, Iowa
Corn Products Refining Co., 17 Battery Place, New York
Douglas Co., Cedar Rapids, Iowa
J. C. Hubinger Bros. Co., Keokuk, Iowa
Huron Milling Company, Harbor Beach, Mich.
Keever Starch Company, Columbus, Ohio
Piel Bros. Starch Co., Indianapolis, Ind.
A. E. Staley Mfg. Company, Decatur, Ill.
Union Starch & Refining Co., Edinburg, Ind.

The above figures show that the receipts of the department have increased 8.73 per eent during the past thirteen years, and that during this period the receipts have been $1,910,157.43 in exeess of the expenditures of the Bureau.

What Canned Goods Ought to Weigh

(Continued from page 17)

No. 2½: 4 1-16 by 4 11-16 ineh sanitary, and 4 by 4¾ ineh hole and eap (22 ozs.) 1 lb. 6 ozs.

No. 3: 4¼ by 4⅞ ineh sanitary, and 4 3-16 by 4⅞ hole and eap .... (25.5 ozs.) 1 lb. 9.5 ozs.

No. 10: 6 3-16 by 7 ineh sanitary, and 6¼ by 6¾ inch hole and eap .... (78 ozs.) 4 lbs. 14 ozs

The weights just mentioned apply also to Swiss ehard and beet tops paeked in eans of the sizes given.

The Food and Drugs Aet requires that food in paekage form shall bear a statement of the quantity of the contents at the time it is offered for interstate shipment or otherwise comes within the jurisdietion of the aet. Beeause of variations in weight whieh may oeeur before shipment, a statement of "net weight when paeked" is not necessarily a statement of the net weight when offered for shipment. Allowanee should be made in paeking produets whieh are liable to change in weight, so that the deterioration of net weight will be true at the time the article beeomes subject to the operation of the law.

Bulk versus Package

THE inerease in the cost of goods put up in paekages at the faetory over the same goods sold in bulk is so slight and the advantage of eleanliness is so great that it is today better economy to buy paekage goods.

There was a time when nearly all foodstuffs eame in bulk. The eracker barrel stood open to eateh dust and dirt and many hands reaehed in for them, either to piek out and sell or to take one to eat. Today we know that the human hand carries more germs than anything else. But today our eraekers are put up in dust-proof, damp-proof paekages in the eleanest of faetories and eome to us free from dirt, dust or any possible germs. There is no argument to favor buying sugar scooped up from the open barrel, beeause it eomes in boxes and bags and is clean.

Oatmeal may be purehased a trifle eheaper in bulk than in paekages. But the bags are not dirt-proof and perhaps the elerk who seoops it out of the bag for you has probably just finished eurrying the delivery horse or has been handling goods that were not elean, yet he thrusts the seoop in and nine times out of ten a portion of his hand goes into the oatmeal with the scoop.

On the other hand, you can have your breakfast food handed to you in a neat eardboard carton lined with waxed paper through which no dust or dirt ean penetrate.

It is just sueh examples as these, and I eould name them by the hundred, that explain what I mean when I say that paekage goods mean clean living.

And there's another point in favor of package goods—the firm's name is on them. You do not think the manufaeturers are going to put out an inferior lot of goods and stiek their name on it, do you? Certainly not. That isn't good business, and

If You Are Interested in Restaurants

whether public or industrial or institutional, by all means subscribe to THE AMERICAN RESTAURANT, a magazine for eating places.

Every type of restaurant is covered by articles written from actual experience.

$2.00 PER YEAR

The American Restaurant
38 So. Dearborn St.
CHICAGO

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

Rumford
THE WHOLESOME
BAKING POWDER

insures whiter, sweeter and lighter cake and bread—it raises the baking just right, and aids to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

RUMFORD CHEMICAL WORKS,
Providence, R. I.
L.71 10.17

The Prize Dish
Of the Ages

Puffed Wheat with milk is considered the greatest cereal dish the ages have produced.

First, it is whole wheat made wholly digestible. Thus every atom of whole wheat feeds. Combined with milk it forms practically a complete food.

It is made by Prof. Anderson's process. The grains are steam-exploded—shot from guns. Over 100 million explosions occur in every kernel. Every food cell is thus blasted for easy, complete digestion.

Bubble Grains

Then these are bubble grains, flimsy, flaky, puffed to eight times normal size.

A fearful heat has given them a taste like toasted nuts. So they seem like food confections, fascinating in their texture and their taste.

As a good-night dish for children nothing can compare with Puffed Wheat floated in a bowl of milk.

Other Ways of Serving

There are three Puffed Grains, each with its own delightful flavor.

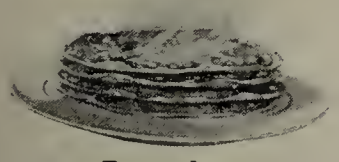
Serve with cream and sugar in the morning, or mix with any fruit.

Crisp and douse with melted butter for after-school confections.

Use as wafers in your soups.

Use like nut meats in home candy making or as garnish on ice cream.

The more you know of Puffed Grains the more you'll serve your grain foods in this form.



Pancakes

The Finest Ever Tasted

Now we make a pancake flour, self-raising, mixed with ground Puffed Rice. The steam-exploded rice flour makes the pancakes fluffy, and it gives a nut-like taste. They seem like pancakes made with nuts.

Try Puffed Rice Pancake Flour and you'll have a new delight.

Puffed Wheat
Puffed Rice
Corn Puffs
Also Puffed Rice Pancake Flour

3273

Your Husband Should Get You A Toledo Fireless Cookstove

He likes to have a good dinner waiting his homecoming; he wants you to look attractive; he realizes that you should get out more in the afternoons. The one thing that will accomplish all these results is a Toledo Fireless Cookstove.

A Marvel of Baking Efficiency

Toledo Fireless Cookstove can do practically any kind of cooking—including baking and roasting—that a kitchen range can do, because of the heat-conserving, triple seal top, with its patented Water-Seal, a water-filled groove in the top of cooking compartment, to keep heat from escaping between compartment top and cover.

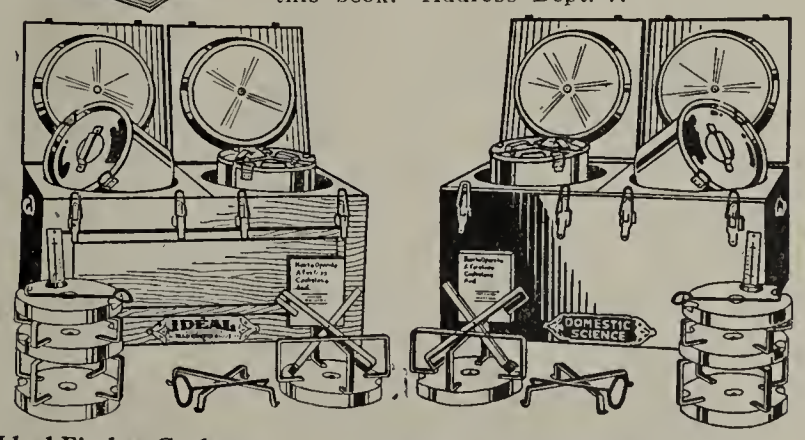
Saves Fuel

You can bake your bread, biscuits and pies, roast meats and cook vegetables in the Toledo. By heating the soapstone for fifteen or twenty minutes you can do cooking that would take hours of fuel burning in your range.

Gives You More Time Away From Home

You can put the unheated foods in the Toledo and go out for hours, returning to find dinner, perfectly cooked and piping hot, ready to serve. You will find that everything cooked in it has an added deliciousness, the toothsomeness of cooked-in flavors, the tender delicacy of thoroughly cooked foods. A store in your town doubtless has Toledo Fireless Cookstoves.

"Delicious Fireless Cooked Dishes" is a fireless cooking demonstration, with colored photographs and recipes. Write for this book. Address Dept. 7.



Ideal Fireless Cookstove **Domestic Science Fireless Cookstove**

TOLEDO COOKER CO.
TOLEDO :: :: :: :: OHIO

if it isn't good business, it means a loss to the manufacturers.

If by any chance you get inferior goods in package, you take it back and your dealer will make it right and then your dealer will communicate with the manufacturer.

And the manufacturer will make good because he lives solely by such men as your alert provision dealer. Practically all of our standard goods, whether in tin cans, tin boxes, glass bottles, glass jars, crocks, cardboard boxes or any other form of package, are so well known that we are absolutely sure of them.

Go into your favorite store and pick out any of the package goods. Did you ever find any impurities, any dust, dirt or foreign matter or any spoiled goods in boxes, bottles, cans and jars?

I don't believe you will find anything like that twice in a lifetime. Remember that in these days machinery takes the place of hands and fingers. Machinery mills the grain and rolls it and puts it in ovens to be cured and fills and seals the packages, so that no hands have touched it and no germs are in it.

And when you come to think of it, this plan of putting goods up in packages that are germ-proof is only following or copying nature. The banana is in a germ-proof package—its skin. The shell of the nut is its germ-proof package. The husks of the corn are germ-proof, air and moisture-proof. Why not, then, be as careful as Mother Nature in putting up our food?—*Holland's Magazine.*

Walnut Growers Decide on Machine That Will Trade-Mark Each Nut

OUT of something over ten thousand replies which the California Walnut Growers' Association received from its advertisement asking for suggestions for branding its nuts individually, what appears to be a practicable machine has been about decided on.

Every conceivable sort of a suggestion was made. They arrived in every form and shape, from the fellow who penciled a crude plan on the back of a postal to the engineering organization that sent elaborate blue prints. Out of this mass of ideas, the committee that is doing the selecting had 127 working models prepared for its examination. After struggling for five months with these, one that seems to do the work has been selected. The payment of the $10,000 cash award, however, is contingent on the inventor's ability to meet certain conditions that the association wishes to have fulfilled.

A. S. Wysong of Los Angeles is the name of the inventor of the machine that seems to be in a fair way to win the $10,000 award. Since it is likely that he will be able to meet the conditions imposed, such as perfecting the mechanical details of his device, getting patents

"I'se in town, Honey!"

You can be sure your pancakes will be **always** light and tender if you make them with Aunt Jemima Pancake Flour. They are never tough, never heavy—but unvaryingly delicious and digestible.

Everything that goes into Aunt Jemima Pancake Flour is of the very finest quality—from the specially ground flours which you could not buy in an ordinary grocery store to the sweet powdered milk. The ingredients are measured and mixed by machinery—the proportions are always exactly right.

When you want to be sure of good pancakes, specify Aunt Jemima Pancake Flour. And for buckwheat cakes try Aunt Jemima Buckwheat Flour.

AUNT JEMIMA PANCAKE FLOUR

Copyright 1920, Aunt Jemima Mills Company, St. Joseph, Missouri

K-V-P

Be sure you get K.V.P Brand Papers

① Vegetable Parchment
② Waxed Paper

To describe some of the achievements of KVP Vegetable Parchment and KVP Waxed Paper, and spread good cheer among the users of these products, we have been distributing for over two years an optimistic little magazine called "Parchment Prattler."

If you use Vegetable Parchment or Waxed Paper, you are entitled to a place on the list. Please address

Sales Department

Kalamazoo Vegetable Parchment Company
Kalamazoo, Michigan
"World's Model Paper Mill"

Manufacturers Attention!

Have you a ready outlet for your products?

Are you seeking an Export Market?

Have you satisfactory domestic representation?

Let's get together. We can put your goods in market channels in double quick time.

Beaver Industrial Corporation
90 West Street, New York

Real Food Prices

"Quote by Calories," They Say

Some are urging that food prices be quoted by calories. And that this method be fixed by law.

The calory is the energy unit used as a measure of food value. This is how some necessary foods would be marked at this writing if priced on the calory basis:

Cost Per 1000 Calories

Quaker Oats	5½c	Hen's Eggs	70c
Average Meats	45c	Vegetables	11c to 75c
Average Fish	50c	Young Chicken	$1.66

Another Way

Here is another comparison.

Quaker Oats costs one cent per large dish. A bite of meat costs that much. One egg costs five times that.

You can serve 8 dishes of Quaker Oats for the cost of one average serving of meat, eggs or fish.

In calories, a dollar buys nine times as much in Quaker Oats as in the average meat foods.

Yet the oat is the greatest food that grows. It is almost the ideal food in balance and completeness.

Pound for pound, it is twice as rich as round steak in energy nutrition.

One needs variety in food. But a man must have 3,000 calories per day. Supply part of them, at trifling cost, in delicious Quaker Oats.

Make this your basic breakfast. It will cut down your food cost and your folks will be better fed.

Quaker Oats

The Extra-Grade Oat Flakes

Quaker Oats mean extra flavor without extra cost. They are flaked from queen grains only—just the rich, plump, flavory oats. We get but ten pounds from a bushel. To make your oat breakfasts delightful, specify this brand.

15c and 35c per package
Except in the Far West and South
Packed in Sealed Round Packages with Removable Cover

(3258A)

on it, etc., it is practically certain that the 1920 crop of Diamond Brand walnuts will be offered to consumers bearing the trade-mark on the shell of each nut.

The Letter Sent to the Unsuccessful Contestants

The association sent the following letter to the unsuccessful contestants who submitted models:

"Dear Sir: The model you recently submitted in our $10,000 walnut branding contest has been received and carefully examined by the committee appointed for this purpose and also by our consulting engineer.

"One hundred and twenty-seven different models from nearly every State in the Union were submitted and a careful examination of these models shows that the different inventors have given this problem a great deal of careful study and spent considerable time and money in trying to solve it. The many good and novel ideas submitted show that America has the world beaten when it comes to inventive genius.

"In deciding which machine was the best a process of elimination was used. Some were rejected because they were not working models, as required. Others were rejected

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

Send Them Sales Letters

You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, "*Value of Sales Letters.*"

ROSS-GOULD Mailing Lists St. Louis

EAGLE "MIKADO" PENCIL No. 174

Regular Length, 7 inches

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Conceded to be the Finest Pencil made for general use.

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"No Friend Like An Old Friend"—

"Purity" Margarine is made by men who have been in the oleomargarine business for thirty-six years. They know-how!

Millions of pounds are sold yearly. People in 30 States buy "Purity".

Give it a place on your market list. You will be delighted with its quality and superior flavor and the definite saving on every pound.

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Also Makers of Nut Margarine

The Pure Spread for daily Bread

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY

Chicago *In Business 66 years* U. S. A.

E. PRITCHARD

Packer and Manufacturer of the Finest

"EDDYS" BRAND

Canned Foods, Jellies, Preserves, Plum Pudding, Sauces, Table Delicacies

and

PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

because the feed device or inking device or some other part of the machine was not satisfactory, and many were set aside, not through any particular fault of the machine, but because there were other machines that were better.

"While the award has not yet been made, your machine failed to make good in the elimination tests and we are shipping it back to you and are enclosing bill of lading for the same with any other papers and plans of yours that you may have sent.

"We wish to thank you for the careful consideration you have given this problem and are very sorry that the conditions of the contest are such that we cannot give all the inventors a prize that would at least remunerate them for the time and money they have spent in this contest.

"As soon as practical after the award is made we will let you know who the winner is and will send you a sample walnut branded by the winning machine.

"Yours very truly,
"California Walnut Growers' Assn."

The term "cider vinegar" should be applied only to the product made from fermented apple juice and it is not permissible to use this name for the product made from chops and dried skins and cores by the process of soaking and subsequent fermentation, according to a recent ruling of the Bureau of Chemistry of the Department of Agriculture.

He who is to win the noblest successes in the world of affairs must continually educate himself for larger grasp of principle, and broader grasp of conditions.—*Hamilton Wright Mabie.*

The possession of great powers carries with it a contempt for mere external show.—*James Garfield.*

"The man who feels that he is working with some one, rather than for some one, develops into a thinker because there is an incentive besides the cash value of his job. He is growing, he feels it, values it and wishes to continue to develop."

China sells the United States nearly $20,000,000 worth of soya-bean oil annually. It is used chiefly for food and for soaps and comes chiefly from Manchuria.

Every Kind of
WARD'S
FAR FAMED
BREAD and CAKES
is the finished and perfected result of skill, science, experience, and the use of highest grade materials.

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New York Boston Providence Cleveland
Brooklyn Pittsburgh Chicago Baltimore

TIN and FIBRE
CONTAINERS
for
Foods—Drugs—Oils
Infinite Variety
Large Capacities
Prompt Deliveries
American Can Company
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With Offices In All Large Cities

Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

Dixie Margarine is pasteurized into purity in every ingredient.

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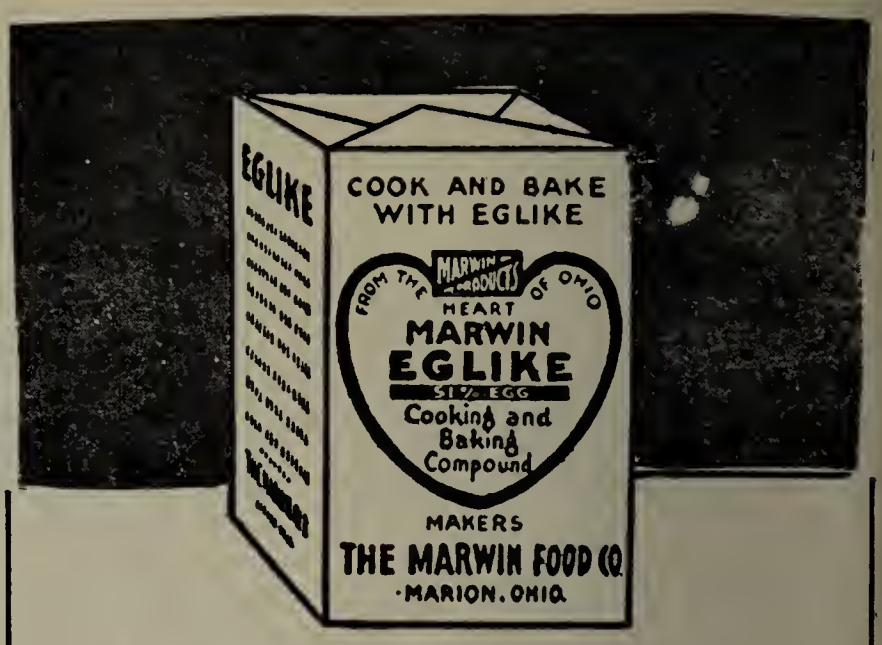
Phosphoric Acid

Baking Powder Materials

Highest Quality
For Food Purposes

Victor Chemical Works

New York CHICAGO St. Louis



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the year around if you keep it displayed and occasionally give it some of your usual advertising help along with our endeavors.

A sure profit is always made on it.

THE MARWIN FOOD CO., Marion, Ohio

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CLEANLINESS, HEALTH INSURANCE, ECONOMY AND CONVENIENCE IN

Our **PET** BRAND **Evaporated Milk**

The Standard of the World

Wins and Holds Trade on account of its Superior Quality

PREPARED BY

Helvetia Milk Condensing Co.

HIGHLAND, ILLINOIS

ORIGINATORS OF EVAPORATED MILK

MORRIS

Supreme Marigold

The flavor of Supreme Marigold Oleomargarine makes good bread better. Like all Morris Supreme foods, it's delicious. Request the kind with the yellow and black label.

MORRIS & COMPANY

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THE AMERICAN FOOD JOURNAL

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Food Officials' Convention
September 28, 29, 30—St. Louis

Food Value of Vegetables

Domestic Science for the
American Farm Woman

Needs of the Oyster Industry

Popularizing Fish as Food

APRIL, 1920

THERE is a lot of health for you wrapped up in a tin-foil package of

Fleischmann's Yeast

Taken regularly, three times a day, it will cure such ailments as boils, carbuncles, eczema, constipation.

Ask your Grocer for a
Fleischmann's Compressed Yeast
and Good Health Booklet

ATLAS GENUINE FRUIT EXTRACTS

The Home of Atlas Genuine Fruit Extracts

Made in Our Own Factory from the Choicest Fruits Obtainable

ATLAS GENUINE FRUIT EXTRACTS are strictly pure fruit products, therefore can be used in any goods, anywhere without statement on labels.

ATLAS GENUINE FRUIT EXTRACTS are noted for their strength, uniformity and retention of the natural characteristics of the fresh fruits.

ATLAS GENUINE FRUIT EXTRACTS are used extensively all over the country because they faithfully reproduce in the finished products that delicious, natural flavor of the luscious fruits.

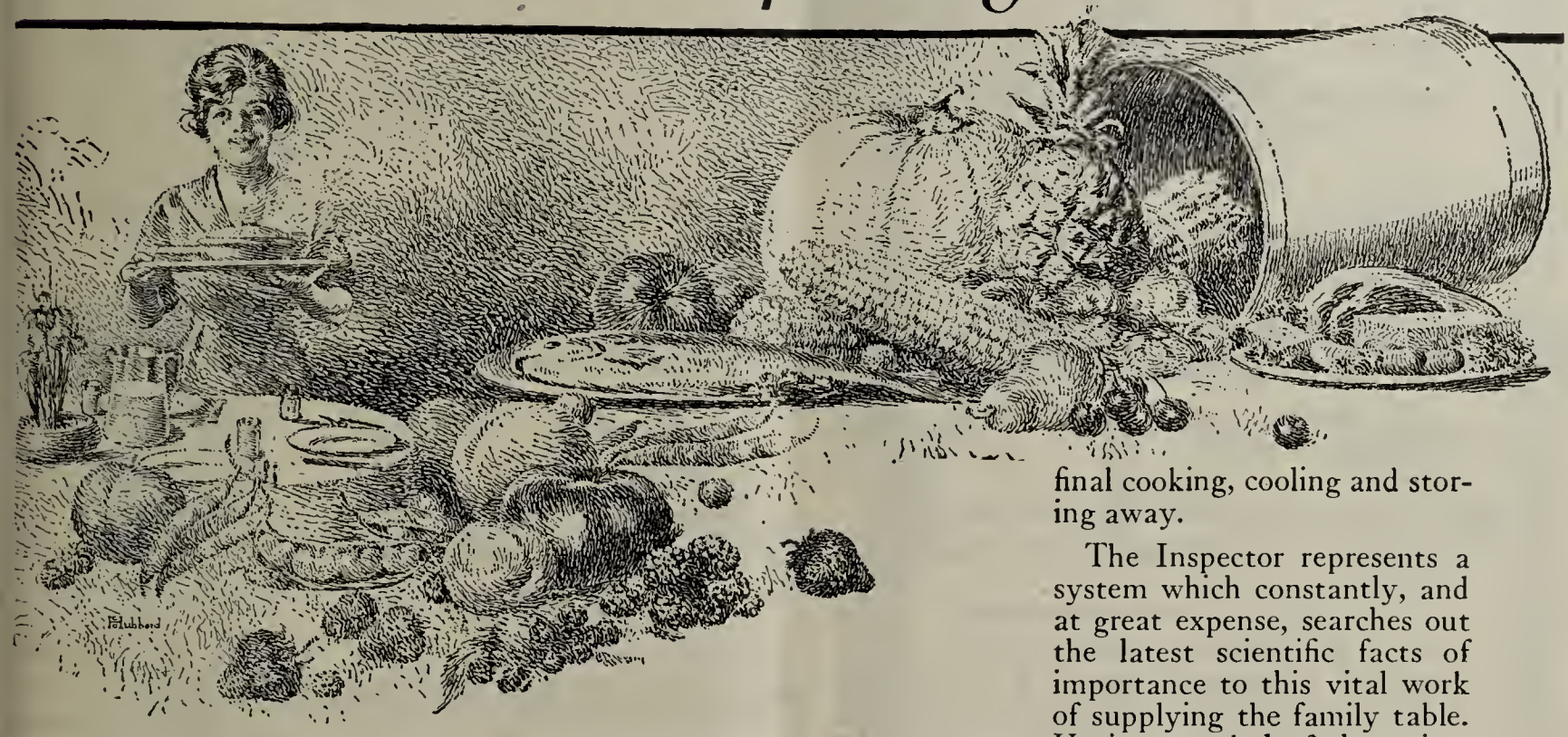
H. KOHNSTAMM & CO.

Established 1851

83-93 Park Place, New York

11-13 East Illinois Street, Chicago

A Canned Food Message -especially to Women



SALUTE the canned food on your pantry shelf. The Pure Food Laws—commendable and necessary though they are—are yet far exceeded in the requirements which the great organized food canning industry of the United States lays down for itself.

This is not an arm representing force or compulsion. Rather, it represents a united ambition on the part of a vast industry to keep itself in spirit and in practice above any necessity of laws of regulation.

Little wonder, then, that the canning industry has been called "the industry which legislates for itself!" Never does this industry forget that it is dealing with *food*—with food, the thing of such vast consequence to the little family circle of the American home. In a very real way it realizes its responsibility and in a very real way it faces its responsibility.

If only you could see food canned For Yourself

Every American housewife should have the privilege of following through some of the great canneries of fruit, vegetables, soup, meat, sea food, milk and other products. Follow the Inspector of the Association as he passes, on one of his visits, from the supply of fresh foods to the sorting, cleaning, preparing; follow the Inspector all the way through to the sealing of the cans, the final cooking, cooling and storing away.

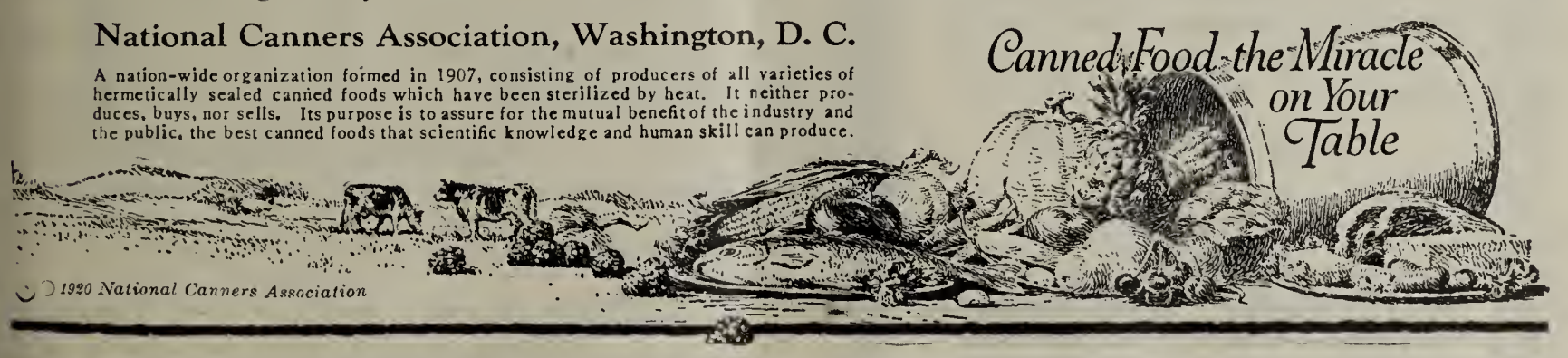
The Inspector represents a system which constantly, and at great expense, searches out the latest scientific facts of importance to this vital work of supplying the family table. He is a symbol of the painstaking care with which the canning business is conducted. He represents the earnest determination of the industry to supply our families with the best of food, clean, wholesome, nourishing and safe.

The tin can brings delicious food at Any Time of Year

And so may American housewives, mentally at least, salute the most self-respecting of objects, the can of food. You are standing before a very wonderful thing—a product which knows the limitations of neither climate nor season, coming to you at any time and from any place. Richly it deserves its title—"The Miracle on Your Table."

National Canners Association, Washington, D. C.

A nation-wide organization formed in 1907, consisting of producers of all varieties of hermetically sealed canned foods which have been sterilized by heat. It neither produces, buys, nor sells. Its purpose is to assure for the mutual benefit of the industry and the public, the best canned foods that scientific knowledge and human skill can produce.



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Ideal Conditions of Perfect Cleanliness Surrounds the Manufacture of Swift's Premium Oleomargarine

For example, one of the principal ingredients is milk.

The pure selected milk is secured from the best dairying districts.

It is brought in refrigerated cars, piped to the milk room, tested, cleaned and pasteurized.

It is then piped to glass-lined tanks, known as milk ripeners, and given added refrigeration.

The milk room in Swift's oleomargarine plant is lighted naturally, ventilated by washed air—the floors and walls are white tile.

Swift's Premium Oleomargarine is not touched by hands in making or packing

Swift's Premium Oleomargarine has a rich, just-salty-enough flavor; is a better spread for bread, and splendid for cooking.

It is economical, and sacrifices nothing to taste and flavor.

It is the most widely distributed brand of oleomargarine. Get a package from your grocer today. He has it.

Swift & Company
U. S. A.

Gem Nut Margarine
A Vegetable Product

Snowflake Oleomargarine
Best White Brand

THE AMERICAN FOOD JOURNAL

Vol. XV APRIL, 1920 No. 4

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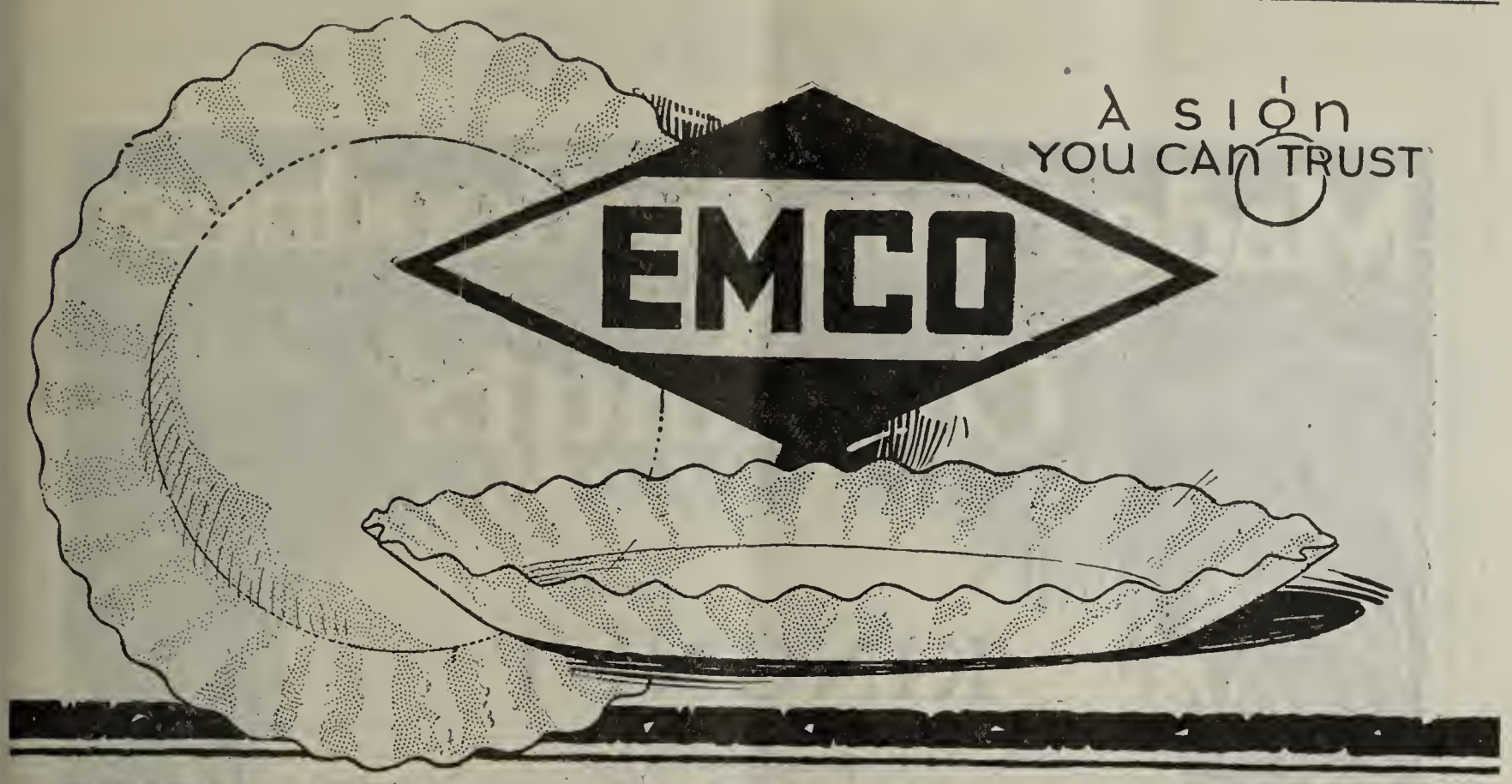

PLATES

A Single Service For Institutions

For sanitariums, hospitals, detention camps, wherever a strictly sanitary single service dinner plate is indicated, prescribe

EMCO PLATES

EMCO Plates are made of genuine sugar maple. They carry all foods hot and cold, dry or moist. They are light, strong and serviceable.

Samples will be sent free to Food Control and Public Health Officials and to Superintendents of Institutions.

Escanaba Manufacturing Co.
Manufacturers
ESCANABA MICHIGAN

Made from the Goodness of Cocoanuts

KINGNUT

a spread for bread of superior merit

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People who, from ignorant predjudice, would not consider using an animal fat oleomargarine, enthusiastically buy and recommend KINGNUT for both eating and cooking.

KINGNUT contains no animal fats or oleo oils. It is made so good that you are authorized to sell it on an unconditional Money Back Guarantee.

Push KINGNUT—for the profit it pays you —for the satisfaction it will give all your customers

Manufactured by

Kellogg Products, Inc.

Buffalo, N. Y.

THE AMERICAN FOOD JOURNAL

Vol. XV CHICAGO, APRIL, 1920 No. 4

Food Officials Decide Convention Date

Meeting of the Officers of the American Dairy, Food and Drug Officials at Chicago Decides To Hold the Next Convention at St. Louis, September 28th-29th-30th

The Executive Committee of the Association of American Dairy, Food and Drug Officials was held at the Hotel Morrison, Chicago, Ill., March 17th. President Guy G. Frary called this meeting for the purpose of deciding the convention date and to select the city where the next convention would be held. Those present were the new Secretary, Fred L. Woodworth, Dairy and Food Commissioner of Michigan with headquarters at Lansing, Mich.; Geo. J. Weigle, Dair and Food Commissioner of Wisconsin, with headquarters at Madison, Wis.; A. M. G. Soule, Chief of the State of Maine Bureau of Food Inspection of Augusta, Me.; Dr. E. L. Doolittle, Chief of the Central District, U. S. Bureau of Chemistry, of Chicago, and O. P. Merrill, representing J. L. McLaughlin, Superintendent of the Division of Foods and Dairies, Illinois Department of Agriculture.

After weighing the matter carefully it was decided to select St. Louis for the next gathering of the Food Officials and the date was set for a three day meeting, beginning September 28th and ending on the 30th.

The local arrangements for the convention affairs will be in charge of E. L. Barnhouse, Food and Dairy Commissioner of Missouri, whose headquarters are in Jefferson City, Mo. The program has not been fully arranged, but there will be one strictly executive session of food control officials. They plan their program so there will be a full and free discussion by members from the various states of various current food control topics, that will be considered. They will make arrangements to receive committees of various trade organizations, the members of which are interested in foods commercially. In addition to that, they expect to meet in round table discussions of food control problems at their luncheons during the three days of the convention. Invitations are extended to all health officers, particularly to municipal and state officers of the states immediately adjacent to the state of Missouri and many are expected to attend.

Considerable attention will be devoted to important papers on Municipal State and National problems. Many new angles have developed during the past year, particularly in regard to milk, also a general discussion will be indulged in regarding substitutes that have been introduced for sugar. Food poisoning will also be carefully considered and provisions suggested for better safeguarding the public against it. The contamination of meat supply at country slaughter houses that are without supervision of the Federal authorities, will also be touched upon. Regulations upon proprietary medicines and drugs is another subject that will be considered, together with the matter of uniform weights and measures and the standardizing of containers. Still another very important subject to be discussed is the use of reconstituted dairy products in ice cream and oleomargarine also the relation of the control of labeling to the control of fake advertising. Proper labeling of food products will be open for general discussion. The recent progress in the knowledge of nutrition as it relates to food products and sanitation of food manufacturing and dispensing establishments will be another important feature of the program.

Arrangements of the program for the sessions (papers, etc.) are in charge of Mr. Fred L. Woodworth, Secretary of the Association with headquarters at Lansing, Mich.

DOPED FLOUR

The general use in Pennsylvania, of flour doped by the chloride bleaching and nitrous acid processes, has been brought to the attention of the Bureau of Foods, Pennsylvania Department of Agriculture. A statewide investigation has been ordered by Director James Foust of the Bureau and samples will be collected and analyzed and prosecutions ordered in all cases where the flour is found to have been treated with chlorine gas or nitrous acid.

The complaints indicate that the doped flour is being used almost entirely by the commercial bakers of the state and is being used in bread, pies, rolls and other pastry offered for sale. But little of it is being offered for direct sale to the public.

The flour in question is being shipped into the state from the Middle West. Through the bleaching effect of chlorine gas or nitrous acid, flour made from a combination of first and third grade wheats is made to resemble flour made entirely of first grade wheat, both in color and texture. Under the food law of Pennsylvania and numerous decisions of the courts, the commercial baker who uses chlorine bleached flour in his products is equally as guilty as the merchant who sells the flour over his counter to the retail trade.

Needs of the Oyster Industry

By Hon. FRANKLIN L. HOMAN

What has occurred in the oyster industry during the last year and what is needed in order that conditions may be improved, is told in the following paper by the Hon. Franklin L. Homan, formerly Connecticut State Senator, President of the Rhode Island Oyster Dealers' Association, Director in the Oyster Growers' and Dealers' Association of North America, and President of the American Oyster Company of Providence. Mr. Homan has carefully studied the possibilities of oyster growing from Maine to Texas and is an authority on the subject.

"YOU ask what has been done in the oyster industry this year?"

I assume your question carries with it a desire to ascertain if any real progress has been made, and also what the industry may reasonably expect from the future. In a general way my analysis will apply to the business as a whole, but more specifically to the cultivated zones of the North and East. For some unaccountable reason oysters have not reproduced their kind in any appreciable quantity for several years. We have entered a period of short supply, which must become more acute in the near future. There is no relief in sight until such time as nature sees fit to reward our efforts with a bountiful "set," which will require from three to five years to reach maturity.

This condition would seem to justify a sharp increase of prices and a demand that could not be supplied. Strange as it may seem, such is not the case. While prices are somewhat higher this year, they are not in proportion to many other commodities, or to the increased expense incidental to the operation of the business. Some will hold that the dealers themselves are responsible for the comparatively low prices, that they compete for trade and unnecessarily reduce their prices, without giving any consideration to costs. If this were true the laws of supply and demand would immediately function and boost prices because of the short supply, if for no other reason. We are forced, however, to admit that each year seems to show a decrease in consumption that keeps pace with the decreasing supply; there always seems to be more oysters than the market requires, and dealers are compelled to force sales.

Much to our regret, the oyster seems to be losing its old-time popularity. This is the most disturbing feature that the industry now faces, and which must be overcome before we can enter a period of true prosperity. Oysters from time immemorial have been the most expensive and popular of bivalves, known and esteemed the world over. Today we find clams and scallops in many communities occupying first place and commanding a price largely in excess of that paid for oysters. A demand for them seems to increase with a constantly rising price in perfect harmony with the laws of supply and demand. It must be borne in mind that these particular varieties of shellfish are a natural or wild product, gathered by individual fishermen without invested capital or organization or any concerted attempt to control or boost prices. This alone abundantly proves that something is fundamentally wrong with the oyster situation.

We, of course, realize that the Federal authorities and other intellectual idealists gave the industry a severe setback when they made unjust seizures and exaggerated statements regarding oysters as a menace to health. It is also said that prohibition has caused a decline in consumption; this may be true, but it does not seem as if prohibition would seriously affect family consumption, or that it would single out the oyster in preference to the clam or scallop; as these bivalves do not seem seriously affected, we must look elsewhere in our endeavor to find a solution of the problem.

In talking with consumers we find a surprising number who say they no longer care for oysters, "that they do not taste like they used to," or that they are afraid to use them unless assured they are grown in pure water. We have here two conditions which undoubtedly furnish the key to our puzzle, showing that instead of producing an article they did not like, or have confidence in, we should endeavor to produce one to meet with their approval. In the beginning it is safe to assume that all tidewater was comparatively pure and all oysters were good; some were undoubtedly more tasty than others, but in the main they were all fairly satisfactory. With the increase of population and their trade waste it would seem logical that our rivers, bays and sounds near large cities would gradually become impregnated with acids and dyestuffs, which absorbed by the oysters in that particular region would cause a change in flavor to a tangy or brassy taste that is not pleasant or appetizing. While it is not probable that these oysters carry any menace to health, they have at least lost the flavor for which they were esteemed and no longer appeal to the epicure or particular people.

Oysters were always an appetizer, a luxury, and must be delicate, dainty and deliciously appealing to maintain the old Roman tradition of "a food for the Gods;" to consider them as a staple food valuable for their protein and percentage of solids is an error of the gravest kind. Even if they were all juice with the proper flavor they would still be popular, for it is purity and flavor that the public wants and demands. The sooner oystermen wake up to this fact the sooner they will be on the road to prosperity. An oyster is an oyster in the same sense that an egg is an egg; they both run from good to bad with all the variations.

There is a noticeable increase in the demand for salty, fine flavored oysters which should be carefully and conscientiously encouraged. There are many places on the Atlantic seaboard and Gulf Coast that can produce oysters of purity and of delicious flavor; Cape Cod, for instance, is being developed rapidly and promises to be an important factor in the rehabilitation of the industry. It is quite probable that new and suitable grounds will be found for finishing the product, and equally certain that doubtful beds near large cities will be abandoned except for seed-growing purposes. When public confidence is restored prosperity will surely follow.

Pearl shell for export from Broome, Western Australia, is selling at $1,075 per ton. Pearls are also bringing fancy prices, one of 20 grains recently selling for $4,000 at the fishery.

Popularizing Fish as Food

THAT cheaper and better fish can be obtained if the dealer and consumer will cooperate to make "every day a fish day," is the view expressed by fish culturists at the newly established aquarium at Miami, Florida. The aquarium will not be opened until April 1st, but it is already completed and is said to represent the latest equipment in scientific study of the under-sea citizen.

In announcing the opening, Mr. James Asbury Allison, president of the Miami Aquarium Association, invites the scientific world to cooperate with his association and make the myriad specimens of fish a more important food product of the daily menu of human life. There are said to be five hundred varieties of fish to study at Miami and a scientific investigation into each variety will be started to ascertain its food-giving value. The life and habitat of the fish will be studied, with the result that it is expected the world will be given information it has never had before.

With the assistance of well known scientists, the largest aquarium south of Philadelphia has been established. Fish taken from their peaceful abodes in the deep-sea will find their way into spacious tanks with their accustomed surroundings, that is, the same water and its submarine flora will travel with them from gulf stream itself in which these great varieties of fish make their habitat. Unlike the other great aquariums in this country where the water must be heated to meet the temperature of the "home" from which they are transported, the Miami aquarium offers everything that the fish may expect, even if taken from the sea. Coupled with this innovation in fish museums, a biological laboratory has been established, where the fish experts will assemble and disseminate the information they gather from their daily confabs while working on the various varieties coming under their observations.

Fish are often looked upon as not being meat, although there is no characteristic difference between fishflesh and the flesh of any other animal. The bulk of it is protein and water. The fish culturists at Miami will not only give the exact amount of protein of the fish but recipes for preparing them.

Fish Meat Food as Beefsteak

It is known that there is nearly pound for pound as much protein in fish meat as in beefsteak, and that fish could be substituted for all other kinds of meat every day in the year without ill effects. Oily fish, like shad, herring and eels, are especially nutritious, affording a large quantity of fat for fuel as well as the tissue-building proteins. Fish roe generally contains more protein than beef, and some fat in addition, and fish meat is quite as easily digested as other forms of meat.

There are other sound reasons for looking to the fisheries for increased production of nitrogenous food in time of a national emergency, the Miami fish culturists point out. Nearly all land animals which furnish meat depend upon agriculture products for their food. A great part of the vegetation now derived by cattle might be used for human consumption, cattle and poultry, for the most part, merely convert one available form of food into another. On the other hand, fishes consume directly or indirectly animal and vegetable forms which in their natural state are available and useless as food for man, such as the aquatic plants which derive their nutrients and mineral fertilizers from the waters. The materials thus assembled are converted directly or indirectly by the fishes into food for available mankind. It is therefore obvious that the adoption of a fish diet by a larger number of people will shift a part of the burden from land vegetation to aquatic vegetation. Land animals, which are warm blooded and actually receive heat from their surroundings, use all their food in the necessary activities and body growth.

The different varieties of sub-sea life to be found in these waters will also be exhibited in the aquarium, thus making Miami a mecca for millions of people, the same as the aquarium in New York City has afforded since its establishment many years ago. Not only a mecca for people to get a glimpse of the fish but to inspect the latest in scientific endeavor to find a new food to replenish that which is rapidly diminishing, due to the heavy demands from European countries for meat products.

The shark-skin leather industry is but in its infancy, although companies engaged in this work will probably do a business of more than $40,000,000, Dr. Allen Rodgers, professor of Industrial Chemistry at Pratt Institute, Brooklyn, New York, recently asserted in an address in Washington. "More than 700,000 sharks will be caught in 1920. Shark-skin leather is far superior to that of animals in wearing qualities."

The man-eating shark offers an important solution to the H. C. of L., according to Rodgers, who declared that there are 75,000,000 pounds of shark meat wasted each year, representing, at ten cents a pound, an annual economic loss of $7,500,000.

"Shark meat is equal to halibut and much superior to cod-fish," he asserted.

Under-sea Motion Pictures

At Miami, too, scientists will be encouraged in their investigations by the use of motion pictures in under-sea photography, thereby supplying specimens and exchanging data with the other great aquariums of the world. The association had the assistance of Louis K. Mowbray, technical director of the British Aquarium at Bermuda, who also supervised those at Boston and New York, before coming to Miami. Mr. Mowbray will be associated with the Miami Aquarium Association in the same capacity.

Installed in the Miami aquarium are fifty large exhibition tanks, one of them being the largest in America and the second largest in the world.

Mr. Carl G. Fisher, of Indianapolis, a well-known fish expert, is vice-president of the Association, and the secretary and treasurer is John Oliver Lagorce, associate editor of the National Geographic magazine, and vice-director of the National Geographic Society.

Upon the advisory Committee of the Miami Aquarium Association are found such distinguished scientists as Dr. Barton Warren Everman, international authority on the subject of sea-life and director of the Museum of the California Academy of Sciences; Dr. Hugh N. Smith, U. S. Commissioner of Fisheries; Dr. David Fairchil, Agriculture Explorer and Biologist; Dr. Alexander Graham Bell, Inventor of the telephone; Gilbert Grosvenor, president of the National Geographic Society; Prof. W. H. Longley, Department of Marine Biology, Carnegie Institution: Dr. Charles Haskins Townsend, director of New York aquarium; Dr. Henry Fairfield Osborn,

(Continued on page 37)

Tea Association Prepares to Conduct Extensive Co-operative Campaign

FIVE years from now, if there is any virtue in advertising, the people of the United States are going to drink many times the tea that is consumed now. The Tea Association of the United States has made the interesting discovery that this nation drinks less tea per capita than any other on the face of the earth. The association sees in this a real opportunity to do some constructive advertising and widespread educational work in behalf of tea. Accordingly a campaign is being planned that will extend over a period of perhaps five years, and will cost all the way from one million to two million dollars.

The immediate inspiration for this lively move of the tea trade is to be found in the proposed active campaign of the coffee roasters and distributors. The coffee people, as has been told in *Printers' Ink*, plan to spend around about $250,000 per year for four consecutive years to increase the consumption of coffee. This money will be invested in face of the fact that the United States already drinks more coffee than any other nation.

Leading spirits in the tea trade frankly recognize and freely admit that they have been very lax in pushing their product. As a result the tea business of the United States today is in very much the same position that the California fruit growers found themselves several years ago. More tea is being produced right along and the consumption does not in any way keep pace. The result is that there are huge overstocks of tea representing just that much loss in worth-while profits.

"We have decided," Charles E. Atwood, chairman of the Tea Association of the United States, tells *Printers' Ink*, "that tea will lend itself readily to the advertiser's art along educational publicity lines."

Mr. Atwood is president of the J. C. Whitney Company of Chicago, exporters and importers of tea. For two years he has been one of the leading factors in the gradual development of the publicity campaign which is now approaching.

Almost a Brand-New Field for Educational Advertising

"Tea," declared Mr. Atwood, "is the most economical of any beverage that can be placed before the consuming public. But when have you seen any advertising or any other educational work that would tend to bring out that fact? When the orange and raisin growers found that people were not buying enough of those fruits they advertised so as to show people a wider variety of uses for them. It is really amazing how much cookery is being taught the public every year by people interested in the exploitation of food products. In tea there is more room to suggest new lines of usage than there ever was in the case of oranges, lemons, raisins or even coffee. Our opportunity is practically one of having an uncultivated field before us, the harvest of which will be limited only by the advertising and selling effort we put into it.

"We are told that the success of advertising depends on keeping everlastingly at it. Therefore, we do not expect to accomplish wonders over night. We think we had better look forward to a campaign of at least three years or even five years. If we do not want to go into it that fully we had better stay out of it altogether."

In a proposition of such magnitude involving so many concerns in various parts of the earth—tea growers, exporters, importers and dealers in general—it is something of an advertising campaign in itself to get the thing properly financed and to line up everybody behind it in a way that will make it a complete success. Consequently, the first care of the Tea Association was to sell the tea interests on the proposition. This is what has been going on for the last two years, and the final push-over is about to be administered.

The financing plan provides for the setting aside of one-fifth of a cent on each pound of tea shipped to the United States. Every exporter of every kind of tea will be asked to retain this amount at the port of shipment. There will be established in each port a committee selected from the firms actually engaged in the tea trade. The committee will collect the money and forward it to the central committee stationed in the United States. With about one hundred and ten million pounds of tea received each year this plan would yield about $220,000.

In addition the association will ask that a like sum be raised by the growers and planters in Japan, Formosa, China, Ceylon, India and Java. This will be done under the direct charge of the various tea guilds or tea association committees.

There already has been enough response to assure the success of this essential part of the campaign. Practically everybody in the industry realizes its condition without being told, and it has been an easy matter to convince them of the desirability of widespread educational campaigns.

The publicity efforts in behalf of tea will go much deeper than the mere use of space in public mediums that will reach the people. There will be educational work attempted through women's clubs, domestic science departments in high schools and colleges and even in the grade schools.

During the preliminary investigation leading up to the decision to advertise it was ascertained that there is a remarkable lack of authentic information relative to the raising of tea and its preparation for use. What little information there is available is so incomplete and so misleading in essential respects that the tea interests feel many people or even the majority of the people have an entirely wrong conception of their product and its effect on the frail human organism. It is proposed, therefore, to have an educational bureau whose business it will be to secure all kinds of dependable data as to the growth of tea, methods of cultivating, curing and shipping it, proper methods of making and serving and so on. All this eventually will work out into elaborate booklets which could be used by schools and domestic science classes as text books.

Direct Mailings to Help Make Tea Experts

Part of the educational work directed toward consumers will be in the form of highly illustrated, easily read leaflets dealing with the individual kinds of tea and designed to show how each can be prepared and served so as to be economical, healthful and stimulating. These booklets and leaflets probably will be printed in quantities, and made available for

distribution among all retailers of tea. They will be enclosed in parcels and may in some cases even be sent out by mail as part of a direct advertising campaign.

It is proposed to make this portion of the work self-sustaining eventually, although it will cost considerable money at the start. Manufacturers and jobbers who send out advertising matter to retailers are everlastingly considering the problem of whether to send the material free or whether the charge for it shall be nominal, enough to pay for producing the matter or sufficient to bring a profit. It is planned to send these tea leaflets to retailers at a price that will pay a slight profit. The money will be put right back into the same kind of work with the object of making a constantly growing fund so that the propaganda may be pushed to the utmost limits. It will be somewhat in the nature of an endless chain idea, and if it is worked out to its eventual conclusion it is a pretty safe guess that the people of the country will know considerably more about tea than they do now.

In close co-operation with the leaflet plan of procedure the dealers will be provided with facilities for making window displays and fully organized local campaigns, including various kinds of educational work.

Right here is another departure that will be good instructive reading for those interested in service work. The local newspaper man will in many cases be the center of the local promotional work. He can be expected to co-operate to the limit because his own prosperity is bound up so closely in that of his customers.

The local publisher who does not get sufficient advertising falls down in this respect because he does not know how to approach his prospects in a constructive way and because the prospects know little or nothing about the niceties of advertising. Here and there you see a publisher who goes into the thing from the right standpoint. Instead of calling upon a retailer and asking him, "Aren't you going to give me an ad today?" he studies the dealer's problems and shows him how advertising can help solve them. He even goes so far as to prepare the copy. When you see a publisher working along this line you never hear him complain about the lack of advertising patronage. Retailers are glad to give him business because they realize the great need of proper publicity efforts.

Some of the local consumer campaigns will specify certain brands or grades of tea as being the most desirable to use, the emphasis being laid of course upon the better varieties. The national consumer effort will of necessity have to be general. It will be confined to advertising tea as a beverage and telling of its benefits. The effort will be to educate the public into drinking more tea and drinking it oftener. Thus the ground work will be laid for the specific local campaigns.

In all the advertising special and individual attention will be given the publicity needs of importers, wholesale grocers, specialty houses, the ordinary retail store, chain stores, retail mail order houses, wagon men and packet tea firms.—Printers' Ink.

Pasteurization of Milk

THE process of pasteurizing milk, which consists in heating it to a temperature sufficient to kill disease germs, but not high enough to cause any radical chemical changes in the milk. The temperature ranges from 140° to 160°F., according to the length of time the milk is exposed to it. If the milk is subjected to a temperature of 158° to 160° F. for half an hour, most of the harmful organisms will be killed.

"Without cleanliness any method of preserving milk, and especially the use of heat, may become dangerous." For while such processes destroy the harmless bacteria they allow the noxious organisms to grow more abundantly. A possible exception to this rule may be found in the use of formaldehyde. Dr. Rowland G. Freeman says that the efficient pasteurization of milk has resulted in a great saving of life (as used in the Nathan Straus milk depots of New York City), and is most valuable when used in this form, and in that of home pasteurization; but that commercially pasteurized milk "should be tolerated only as a temporary means of modifying the dangers of dirty milk." For the rapid and inefficient method in which it is prepared and transferred to the utensils in which it is delivered, and its frequent contamination anew, often result in the milk containing more bacteria than the better grades of raw milk.

In other words: "Commercial pasteurization interferes with the crusade for clean milk by making dirty milk more marketable," since the lactic acid bacteria are destroyed, thereby preventing the milk from souring.

Some of the disadvantages of heating milk (serious only when it is heated repeatedly at a temperature above 75° C.) are given by Dr. Raudnitz as: the destruction of enzymes favoring digestion; the loss of gases of milk, rendering part of the earthy phosphates insoluble; the changing of the character of the soluble proteids, etc. The fat of the milk undergoes least change. Butter made from pasteurized cream that has been soured by pure cultures of bacteria and cheese made from soured milk in which most of the harmful bacteria have been destroyed, are safe food; while whipped cream, a dangerous article of diet in warm weather, can be rendered both palatable and harmless by adding sugar to its preparation from pasteurized soured cream.

"The list of chemical sins committed by pasteurizing or sterilizing milk is indeed long, but almost all conclusions drawn from them have remained unproved," says Dr. Raudnitz; for while infantile scurvy may be caused by the exclusive use of milk heated repeatedly or for too long a time, he also shows that out of 21,000 children in France that were fed on highly sterilized milk only six were affected with scurvy.

A temperature of 140° Fahr. (or 60° C.) for forty minutes will destroy that most dreaded of all bacilli in milk—the tubercle bacilli—while the taste of the milk will be unchanged and its chemical composition scarcely affected. This temperature is said to destroy from 98 to 99.8 per cent of all the bacteria present in milk.

Dr. S. D. Belcher, in his book on Clean Milk says: "The exact value of pasteurization and sterilization of milk should be clearly understood and the effect of these processes not exaggerated. They are effective for the time being and are a protection against the contamination which has already taken place. They do not, however, operate to control fu-

ture contamination, and it is folly to suppose that milk once heated to 174° F., or even to the boiling point, has been made proof against the action of bacteria which enter after the milk has undergone either of these processes. Pasteurized milk and sterilized milk cannot be exposed with impunity, nor can they be preserved without proper icing. The same care and treatment accorded raw milk must be given to them if the good effects of the heating processes are to be retained."

Dr. Alfred Baker Spalding in his report of the Milk Commission of the San Francisco County Medical Society, speaks of certified milk as being of the utmost value in infant feeding, and strongly recommends the use of this pure milk above any that has been treated by pasteurization or other artificial handling. He says: ". . . . It is true that a sort of bacillus soup called 'pasteurized' milk can be obtained from which has been strained a part of the sediment (manure) together with all legal excess of butter and fat, which has been heated for a few seconds to a degree that kills many of the harmless germs and stuns some of the more virulent ones."

"Certified milk," he writes, "means a milk from well-fed, healthy, non-tubercular cows, a milk so free from contamination and so carefully handled from the time of milking to the time of delivery, that the bacteria content shall not at any time exceed 10,000 germs per com., a milk containing all the nutritious milk solids without subtraction, addition or manipulation of any kind, a milk that is immediately cooled, bottled and sealed at the producing farm and delivered cold in such original container to the consumer as quickly as commercial facilities will permit."

He also says: "There are many brands of so-called 'pure milk,' but only one has held the respect of the laity, and that is the milk certified to by an organization of unbiased and commercially uninterested physicians."

Some writers are believers in the value of pasteurized or sterilized milk and strongly advocate its use in preference to clean, raw milk.

Dr. R. G. Freeman, in an article on "Pasteurization of Milk," argues that the germs of such diseases as typhoid, diphtheria, scarlet fever, and epidemic sore throat may be found in certified milk as well as in ordinary market milk, and that the safest plan is to use pasteurized milk, but the milk must be pasteurized by the *consumer himself,* who should heat it at a temperature of 140° F. for forty minutes. One of his conclusions is that "there is no absolute safety in any raw milk."

In an article by S. Henry Ayres on "The present Status of Pasteurization," three processes of pasteurization in use at the present time are described. One is the flash or continuous process; another, holding process, and the third is known as pasteurization in the bottle. In the flash process the milk is heated rapidly (from 30 seconds to one minute) to a temperature of 160° F. or above and then cooled quickly; in the holding process the milk is heated rapidly to temperatures from 140° to 150° F. and held at the desired temperature for about 30 minutes, and cooled rapidly. Sometimes, says Ayres, the milk is merely retarded in its passage through the tanks to the amount of 30 minutes, which is not proper method. When correctly done, however, this latter process is more efficient and in every way superior to the flash process. The more recent development to be used on a practical scale is pasteurization of the milk in bottles, which Ayres describes as follows:

"This process consists of bottling the raw milk in bottles with water-tight seal caps, then immersing them in hot water until heated to 145° F. The bottles are then held from twenty to thirty minutes. The cooling is accomplished by gradually lowering the temperature of the water until the milk reaches 50° F."

Regarding the advantage of this method Ayres writes:

"The advantage of the process of pasteurizing in the bottles lies in the fact that the milk, after heating, is not exposed until it reaches the consumer, thereby eliminating any danger of reinfection with disease-producing organisms through handling of the pasteurized milk. For this process to be successful, it is, of course, necessary that the seals be absolutely water-tight, for the bottles are submerged in water and, during cooling, a leaking cap might allow infection by a polluted cooling water."

The above author further says that a modification of the holder (or tank) system of pasteurization has been developed which will prevent reinfection to a large extent. This process consists in "pasteurizing milk at a temperature of 145° F. for thirty minutes, then bottling it while hot into hot milk bottles which have been steamed just previous to filling. The bottles can be capped with ordinary paper caps and then cooled by a blast of cold air."

Ayres has made laboratory studies and experiments concerning the pasteurization of milk, and he says that the trend of pasteurization in general is toward the holder process, and the use of lower temperatures is becoming more universal. Referring to the objections that have been raised to the pasteurization of milk, this authority says that from a bacteriological, chemical and economical standpoint, it is very desirable that milk be pasteurized at low temperatures.

At 145° F. for 30 minutes, pasteurization will completely destroy disease-producing bacteria, and at the same time will leave the maximum percentage of lactic-acid bacteria in the milk. Also, milk pasteurization at 145° F. for 30 minutes is not appreciably changed in its nutritive value or digestibility; and it has an economic advantage in the saving in cost of heating and cooling the milk. He recommends, therefore, that milk be heated to 145° F. and held at that temperature for 30 minutes. He says in conclusion:

"In the present status of pasteurization the ideal to be achieved is to use the process not to make a dirty milk a clean milk, but to make a clean milk a safe milk."

In their "Summary" these writers say, among other things:

"The process of pasteurization in the bottle, using a temperature of 145° F. for 30 minutes, causes satisfactory bacterial reductions."

"The process of bottling pasteurized milk while hot into hot steamed bottles causes equally good bacterial reductions as does pasteurization in bottles. Even with the same lengths of exposure of 30 minutes and the same temperature of 145° F., the bacterial reductions are often much greater than those produced by pasteurization in bottles."

MILK SUBSTITUTE FOR PEANUTS

Professor George W. Carver, of Tuskegee Institute, Tuskegee, Ala., has produced a milk substitute made from peanuts, which, he announces, is wholsome and posseses normal fat contents and ean be made at a cost much less than city prices for milk. Professor Carver, who is continuing his experiments to determine the keeping and cooking qualities of his product, claims it has a delicious nutty flavor and closely resembles cow's milk.

Doing old things new ways is a rare ability, but it always succeeds.

A Chat About Cheese

ALTHOUGH at present cheese is almost as scarce as butter, we must hope that the summer will bring a more plentiful supply of such milk-products, the lack of which is serious, considering the very scanty supply of meat, as fat in some form is essential to health. Cheese is a particularly valuable sort of food, nourishing, wholesome, rich in fat, and even at its present price, comparatively cheap.

It is curious that we do not use either sheep's or goat's milk for cheese making, especially when cow's milk is scarce. In many parts of Europe, particularly in mountainous countries, such as Switzerland and Norway, the peasants eat large quantities of goat's and sheep's milk cheeses with their rye or barley bread. We regard Gruyère and Roquefort cheeses as delicacies, yet the one is made of goat's milk, the other of a mixture of it and sheep's milk. In Norway, "mysost, or goat's milk cheese," is very popular, and is eaten in thin slices with the "fladbrod," or thin griddle-cakes of that country. In Denmark and Sweden, too, thin slices of similar cheeses are eaten, spread on bread and butter.

Cheese has been made in England from very early times, and also in Scotland and Wales. In the West Country there has been a great revival in cheese-making during the last few years, and it promises once more to become an important agricultural industry in that part of England. Oddly enough, Ireland, with its rich pasture-land and abundant supply of milk, has never made much cheese, though it is famous for butter. The country-folks do not, as a rule, care for it, though it has grown in favor of late, but in the Green Isle, "bread and cheese" is not a proverbial expression for daily frugal fare. Even better-class people do not use it to any very great extent, it does not appear on private tables after dinner, as a matter of course, as it does here, though it is served at hotels. Cream-cheese, however, is much esteemed in Ireland, at it is often "ripened" by adding a sprig of nettle-leaves, before the cream is hung up to drain. Cheese-dishes are rather popular in Ireland — macaroni-cheese, cheese-omelettes, soufflés, etc.

Old English writers frequently allude to cheese. In Tusser's "Five Hundred points of Good Husbandrie," he gives directions for cheese-making adding that a perfect cheese must fulfill ten conditions: (1) It must not be like Gchazi, that is, dead-white, like a leper; (2) not all salt, like Lot's wife; (3) not like Argus, full of eyes; (4) not like Tom Piper, "hoven and puffed," like the cheeks of a piper; (5) not like Crispin, leathery—St. Crispin was the patron saint of shoemakers!; (6) not like Lazarus, poor; (7) not like Esau, hairy; (8) not like Mary Magdelene, full of whey, or maudlin; (9) not like the Gentiles, full of maggots, or "gentils"—the larvæ of blue-bottle-flies, much used as bait by fishermen are still called by this name; (10) finally, the cheese must not be like a bishop, made of burnt milk! The last referred to the queer old expression when milk or porridge was burnt, or meat over-roasted, "The Bishop hath put his foot in it," or "The Bishop is in the pan." In another place Tusser says:

"Blesse Cisley (good Mistress) that
Bishop doth ban,
For burning the milk of her cheese
to the pan!"

A note on "Tusser Redivivus" explains the couplet thus: "When the Bishop passed by in former times, everyone ran out to partake of his blessing, which he plentifully bestowed as he went along, and those who left their milk upon the fire might find it burnt to the pan when they came back, and perhaps ban, or curse, the Bishop as the occasion of it, as much or more than he had blessed them; hence it is likely it grew into a custom to curse the Bishop when any such disaster happened, for which our author would have the mistress bless (Anglicé *correct*) her servant, both for her negligence and unmannerliness."

Grose, too, mentions "The Bishop has set his foot in it," as a North Country saying when milk was burnt in the boiling, and food spoiled in this way was said to be "bishopped." As the heating of the milk to a proper point before adding the rennet, or other curdling agent, requires great care, probably negligent cheesemakers were only too ready to attribute short-comings in this respect to "The Bishop." It is by no means easy to make good cheese, much care, skill and practice are required all through the process, whether the cheese is "double," or "single," hard or soft, or the small skim-milk cheeses.

At the English cheese-fairs, markets, and in shops, small hard, poor, and rather indigestible cheeses are sold, made from skim-milk, but eagerly bought and eaten by the agricultural laborers of these counties. The Dorset "blue cheese," or "blue-mould cheese," is also made from skim-milk, but is much esteemed locally. The small Cornish cheeses are also excellent. Stilton, rich and mellow, is one of the most popular of British cheeses, and excels other "double" or "whole-milk cheeses," Cheddar, Dunlop, Cheshire, and double Gloucester, and even the standard American cheeses, in its supply of fat, or cream. Good Cheddar only contains about 33 per cent fat, 28 casein, and 33 water, while Stilton of the richest type contains 44 per cent fat, 29 per cent casein and 20 per cent water, the remainder consisting of mineral matter, chiefly common salt. Most of the milk, sugar, and albumen are drained off in the whey.

Cheshire, like Somersetshire, Gloucester, Dorset, and parts of Yorkshire has long been specially famous for its cheese. According to some people the saying "grinning like a Cheshire cat" was due to an old custom of moulding cheeses in the form of a cat, who was depicted wearing a broad grin. This, however, seems a very far-fetched explanation—in Ireland a rather inelegant simile compares a person with a grin to "a cat in the tripe-shop." In England the most popular foreign cheeses are Gruyère, Gorgonzola, Roquefort, Parmesan, Camembert, Limburg, and Brie, and such Dutch cheese as Gouda and Edam. Cheeses made of pure unskimmed milk, the so-called "double-cheeses" come very largely from America, where countless great factories turn out vast quantities of cheese, made in a uniform manner, with the most improved appliances. They usually exceed all English cheeses, except rich Stilton in their percentage of cream, or fat; Dunlop cheese has about 6 per cent more fat than Cheddar, about 1 per cent less than the standard American cheese. The hard skim-milk cheeses of Dorset, East Anglia, and other parts of England contain a large proportion of milk-sugar, and other heat and flesh-forming substances, and are sustaining to a very great degree. Wensleydale and Cotherstone are famous for their cheeses, in fact most parts of England boast of some special cheese.

Roquefort, beloved of epicures is

one of the oldest of Continental cheeses, it is said that Pliny mentions a very similar cheese made in the same district! It is said that a flock of about 450,000 sheep and goats are kept on purpose to supply the milk for it, they are milked in the evening after they have been allowed to rest a little after their return from the pastures. The milk is heated almost to boiling point, skimmed, and set aside till the morning, when it is skimmed, heated to 98 degrees, and then mixed with the morning's milk for coagulation. Then the curd is well kneaded with the hands, and pressed in layers into moulds perforated for drainage, a thin layer of mouldy bread being put between each layer to hasten the "ripening" of the cheese by supplying the necessary germs of the "green," or "blue mould" peculiar to cheeses. The curds remain in the moulds for three or four days, then they are taken to Roquefort market, and sold to various makers, who continue the ripening process by placing the cheeses in the damp caves which abound in the neighboring limestone hills. Here they remain for about a month, during which period salt and brine are carefully rubbed into them, the rinds being pricked with long needles, to allow the salt to penetrate, and to hasten the development of the mould.

Foreign cheeses often owe their peculiar taste to the herbs on which the cows, sheep, or goats feed, some contain aniseed, caraways, and other flavorings, while old-fashioned English cheese-makers often added aromatic herbs, such as sage to their curds, a custom which also prevailed in New England. Ladies in olden times pridcd themselves on being good judges of chcese.

Many old rural sayings and proverbs relate to cheese. We have all heard that "the moon is made of green cheese," and of the Wiltshire "Moon-rakers," who tried to rake the reflection of the full moon out of a pond, thinking it was a cheese! A mean person is called a "cheesc-parer," and we have often been told that "'Tis an old rat that won't eat cheese!"

Country children call the round fruit of the mallow "cheeses," the wood-sorrel is "cuckoo's bread and cheeses" and the hawthorn "cuckoo's bread and cheesc tree," while the yellow hammer's odd song is supposed to be represented by the words "A little bit of bread and no chee-ce-se!"

The Distribution of Milk in General

Being Part of a Special Investigation made Last Year

By B. H. HIBBARD and H. E. ERDMANN
of the Agricultural Experimental Station of the University of Wisconsin

The role of the middleman. The middleman performs a function as necessary and as truly a service as production itself. Indeed, he does actually produce when he adds value to a commodity by placing it at the consumer's door at the moment when wanted and in the quantities desired. This being true of commodities in general, how much more is it true of milk, a commodity which must, for the most part, be consumed within 48 hours from the time it is produced?

Methods of distributing milk may be divided into two classes, direct and indirect. In the direct method the producer himself or his hired employec delivers the milk to the consumer, or the consumer himself gets it from the producer. In the indirect method the producer sells the milk in bulk to a middleman who puts it through the various necessary processes on its way to the consumer. The larger the city the greater grows the distance between the consumer and producer, and the more necessary does it become that there be an efficient middleman to take the milk produced by the more distant producers and distribute it.

In most cases of indirect marketing, the evening's milk is, at best, about 34 to 40 hours old, and the morning's milk at least 22 to 28 hours at thc time of delivery. In ncarly cvery city a considerable quantity of milk is marketed through stores. The usual practice is for the producer or distributor to leave a quantity of bottled milk at the various stores handling his product. The store then delivers the milk along with its groceries. Much of the milk sold through stores is bought by people who live near by and who call for their purchases. Store sales of milk are mostly "extras"; that is, they are sales to people who take milk regularly from a milkman but who occasionaly need a quart or two extra later in the day. In other cases, especially in hot weather, they are sales to people who lack refrigerator facilities. These, instead of buying a quart or more at a time from a milkman, go to the grocery store for a pint as they need it.

Duplicates of routes and equipment. With our present competitive system of distributing milk, there is an unnecessarily large amount of duplication. Not only are there often more men engaged in the business of delivering milk than are necessary, but each has more machinery and general equipment than is necessary in handling his business; that is, each could usually handle much more business without a great increase in his fixed investment. In almost any town one may frequently see three or four delivery wagons on thc same street, at the same time, literally traveling in each other's tracks. Some streets were found to be covered as often as seven times daily.

Thesc delivery wagons for the most part carry from 175 to 350 quart "points." (A quart of milk, or two pints, or a half pint of cream is considered a "point.") It has frequently been stated that there is a grcat opportunity for reducing the cost of delivcring milk by cutting out much of this unnecessary duplication of routes, thus enabling each man to deliver from 350 to 500 quart points per day. These statements are well founded, although there are not sufficient data at hand to warrant any definite conclusion.

Proposed remedies. At least four different remedies for this unnecessary duplicaton have been proposed: (1) cooperation by producers; (2) municipal monopoly; (3) publicly regulated private monopoly; (4) marketing through stores. Let us note briefly the claims made for each of these.

Cooperative distribution by producers has been most widely heralded as a remedy. "Eliminate the middleman" has frequently been the cry. Cooperation, however, would not eliminate the middleman. The producer would mercly be hiring a group of men to perform the middleman function. Nor would it necessarily eliminatc compctition. It might, however, effect very consider-

able economies in combining a number of smaller distributors.

This system is being tried by producers in several parts of the country.

Municipal monopoly in milk distribution has not been tried anywhere in this country, although it has frequently been proposed. Its advocates argue that, since the cities insist on prescribing the manner in which the milk is to be handled, they might as well handle it themselves, just as they now frequently do the water supply. They point out that such a system would:

(1) Eliminate competition with its wasteful duplication of plants and routes, since all milk would be handled and distributed by the city owned plant or plants.

(2) Make possible the grading of milk and the payment on the basis of quality.

(3) Provide a safer and better milk, since the handling would be done by financially disinterested parties and in one or a few plants instead of in many.

Under the present system it is difficult to provide safe milk. Chicago and Milwaukee are now requiring that all milk, except that from specially inspected farms, must be pasteurized, and furthermore, that recording thermometers must be used, the records to be collected by the Health Department at regular intervals. But there is almost always pasteurization by numerous small plants in which it is difficult to maintain uniform conditions.

With the small flash pasteurizers, such as are used in many of these plants, it is difficult to control the temperature. In spite of care, the temperature may be 140 degrees or less one moment and 170 degrees or more ten minutes later. This is especially true when the boiler capacity is small. In the larger plants automatic regulating devices are being used successfully. Were the milk handled in one large plant, or in several large plants, the best modern equipment could be used so as to insure a uniformly safe milk at a moderate price.

A publicly controlled private monopoly is another proposed remedy. The idea is the granting of a monopoly of the milk distribution to a private corporation so controlled as to place service above profits, allowing only a normal return on a reasonable investment of capital. Such a monopoly, it is claimed, could bring about results similar to those obtained through municipal monopolies.

Marketing through stores. It has been proposed to utilize the store delivery systems for the distribution of all, instead of for a small part, of the milk supply of a city. In fact the plan has been tried, but without marked success.

Rising prices. During 1916 and 1917 prices of almost all commodities have been rising at a phenomenal rate. The cost of producing and distributing milk has of course increased along with the general increase of other costs and prices. With higher cost for feed and labor, the producers have felt the necessity of higher prices for milk; and with the high prices of other dairy products into the manufacture of which milk enters, they have felt that they were entitled to an increase. This led to numerous strikes during the past year, in most of which the farmers were successful. But in nearly every case the distributors soon raised their prices a cent or two, thus passing the burden on to the consumer. The latter, in turn, objected, even going so far in some cases as to boycott the offending dealers, but to no avail. Such failure to secure reduction of price might have been expected had the consumers noted the fact that such a boycott could not long decrease seriously the demand for milk; that even at the higher prices milk is cheaper than many other foods; and that the demand for milk in other forms and in other products is constantly increasing. Thus, ice cream a few years ago was a luxury; now it is a common article of food. Condensed milk is being more and more widely used where fresh milk is not available. During the past two years Europe has taken vast quantities of condensed milk. Whereas but 22,800,000 pounds of condensed milk were exported in 1914, exports in 1915 rose to 75,700,000 pounds, and for 1916, to 219,400,000 pounds.

Furthermore, cheese and butter exports have greatly increased, causing much higher prices for those products and enabling creameries and cheese factories to compete more strongly for milk.

Retail milk prices, like prices of many other products in common use, tend to become customary. That is, the consumer often pays the same price for a number of years, although the distributor may be paying widely different prices at different times during the period. Custom thus acts as a drag on certain prices during periods of changing price levels. For this reason the price of retail milk did not, for the most part, go up as soon as did the retail prices of most other foods.

When prices did rise, there was considerable opposition on the part of consumers, and when smaller dealers promptly followed the lead of larger dealers there were frequent charges of conspiracy and demands for federal investigation. In a number of instances it has recently been demonstrated that it requires considerable boldness for one dealer, even though a large one, deliberately to raise his price unless he is sure most of the others will promptly follow him. At such a time small dealers are often inclined to try to increase their business by remaining for a time at the old price. On the other hand, it would be suicidal for a small dealer to raise his price with many other dealers selling at the former figure. Hence prices are likely to remain constant until there can be practically concerted action, tacit or otherwise.

Furthermore, prices of milk usually go up or down by a whole cent, our smallest coin; in fact, this is almost always true except where milk is sold by the dollar's worth of quart or pint tickets.

POULTRY DRESSING

Good bleeding is absolutely essential to a good appearance on the market, and retards decay.

Dry pick, if possible. Scalding is particularly undesirable because it hastens decay.

Chill every dressed bird until the body temperature is below 35 degrees F. Never pack or ship an imperfectly chilled bird. More decay is due to imperfect chilling than to any other single factor in dressing. Dry chill, if possible. Chickens cooled in water lose flavor, decay sooner and will not cold store as satisfactorily as dry-chilled. Refrigerator cars will carry well-chilled birds in good condition, but they can not chill warm birds to a sufficiently low temperature.

Pack in boxes or small kegs whenever possible. A large barrel makes an undesirable package because where poultry is packed in large masses the weight of the upper layers crushes the birds at the bottom.

Line all packages with parchment paper and cover the top of the poultry before the lid is put on.

Wrap every head in suitable paper so that blood from one bird will not mar the appearance of another.

Use only good refrigerator cars and see that they are in good condition. Ice and salt the car twenty-four hours before loading. The car at the end of twenty-four hours should show a temperature below 40 degrees F. at a point 4 feet above the floor and between the doors.

Circulars describing in detail the best methods for handling, packing, and shipping poultry will be sent upon request to the United States Department of Agriculture, Washington, D. C.

The Food Value of Vegetables

There is no cure-all and no feed-all. Man more than any other animal demands a variety of food. Civilization has developed for him as many appetites as diseases, and he must accompany his tonics with an equal number of viands. In defiance of the vegetarians, I believe that a man cannot flourish, like a bullock, on plant food alone. Neither can he exist, like a tiger, on an exclusive diet of meat. He is in his make-up an all-around cosmopolitan, and must have both kinds. That is why it would be an enormous mistake to sacrifice the herds and flocks of a country for the sake of using all of its lands to produce grain and vegetables. Some of the great dinosaurs were exclusive vegetarians, but their career was relatively brief.

Must Have Potatoes

But, on the other hand, many persons are too neglectful of vegetable food. There are essential chemical elements in vegetables which do not reappear—at least not in sufficient quantity—in the flesh of animals fed upon them. Almost the only vegetable that everybody habitually eats is the potato, a gift of South America to the world, and an article of food that was unknown to white men until the sixteenth century, when the Spanish conquerors discovered it.

Charles V., who was, among his intimates, as famous for eating as for conquering, turned up his long Burgundian nose at this democratic vegetable of the golden West—but, try to imagine the world without potatoes today! It is the proteus of the kitchen, and the (often unrecognized) king of the table.

The savants who measure the value of food by chemical balances tell us that the potato is the best all-around vegetable, and that its most notable constituents, from the dietary viewpoint, are phosphorus and potassium. Your doctor will explain to you what those elements do when introduced into the human system. I remember that it used to be said that phosphorus is good for the brain, and I have read that the body of an ordinary man contains as much phosphorus as would make 800,000 old-fashioned friction matches. But it is not by any means all in his brain; his bones claim a large share. Of course, it exists in the body not as pure phosphorus, but in a combination with other elements.

Parsnips and turnips also contain considerable phosphorus and potassium. Beets are very rich in sugar, rivaling the sugar cane and the hard maple tree in their appeal to the sweet tooth of mankind. Sugar is full of carbon, and its function in the body is to produce heat, fat and muscle.

Celery has much lime and magnesium, and spinach is rich in iron. Speaking of iron, it ought to be generally known that pure, light, red wine—a vegetable product—furnishes iron to the blood in an assimilating form, and prohibitionists are wrong to make undiscriminating war upon it. Whiskey is the rattlesnake they ought to destroy. But the average American with money to spend is usually both surprised and indignant when told that he doesn't know how to drink wine. They don't know how to drink it in England either.

Vegetables Healthy

Lettuce contains iron, which gives a good deal of its value to a salad. Asparagus contains calcium and magnesium. Cabbage and Brussels sprouts have lime and potassium, and to these cauliflower adds sulphur. French beans contain lime, sulphur and phosphorus, and green peas lime, sulphur, potassium and phosphorus. Onions are valuable for their volatile oil, which stimulates digestion.

Many of the best vegetables are not "body builders," but, by virtue of their various mineral salts, they are purifiers and blood-stimulators, They carry their chemical constituents in a form which the chemist cannot imitate, although he can recognize them. He cannot compound the same materials in such a way as to enable them to act when taken into the body as they act when they have been prepared by nature in the vegetable tissues.

In the use of vegetables a great deal depends upon the cooking. Not only does poor and improper cooking spoil their taste, but, worse than that, it spoils, or prevents, their best effects. Some kinds of plant food should not be cooked at all. This is generally true of fruits. When quite ripe they are ready to eat, and heat will destroy many of their valuable properties. Each person has to find out for himself what kinds of fruit "agree" with him, and what kinds do not.

Grapes are almost always gratifying alike to the palate, the stomach and the body. I think this may be largely due to the peculiar form in which they present iron to the digestive apparatus. Perhaps you can get the benefit of this by eating grapes instead of drinking the iron made from them. Bananas are exceedingly nourishing, but I find it well to scrape off the thin inner skin under the peel. The orange is the king of fruits, at least the one that I bow to, even before the apple.

Among the berries the strawberry stands in a high place apart, on a pedestal, as it were. The peach is a luxury, and pears and plums are good for those who can readily digest them, but what a thing of joy is a cherry—a ripe, red, round cherry, as big as a king marble.

CHEMICAL DICTIONARY

The Condensed Chemical Dictionary, compiled and edited by the Editorial Staff of the Chemical Engineering Catalog. The constantly increasing volume of inquiries for detailed information regarding chemicals and chemical products received by the Chemical Catalog Company, Inc., as well as by the public and technical libraries, has made obvious the demand existing for some one book that would supply the outstanding facts regarding the various chemicals and chemical materials ordinarily met with in commerce.

While the great value of this dictionary to the non-technical user is very apparent, it must not be lost sight of that to the chemist, even one having access to a good library, the book is invaluable as a time-saver.

Every precaution has been taken to make the book accurate and complete within the limits set for it. Since the dictionary first appeared in September, 1919, over 6,000 copies have been sold which necessitated a reprinting of the book. All the errors, typographical and otherwise, which were found or called to the attention of the publisher, have been taken care of, and it is believed that the book is now as nearly typographically and chemically correct as it is possible to make a book dependent upon human efforts.

Maybe Lunch Box Is Reason Pupil Is Dull

He Can't Study if He Has Wrong Kind of Food—Some Suggestions for the Lunch

When a child fails to make rapid progress and does not stand well in his classes, the fault may lie not in his unwillingness or mental inability, but in his lunch box, say workers in dietetics. Five days out of seven the child in school who is too far distant from home to return for the noon meal must depend upon the contents of the lunch box for one of his regular daily meals. The problem of providing this meal, therefore, is as important as that of providing any other meal.

Children living in the country have the best of opportunities for a proper lunch at school, say the home economics workers at the New York state college of agriculture. Eggs, milk, and fruit, which should make an important part of the child's diet, are plentiful. But frequently the busy housewife packs the school lunch hurriedly from the same food served at breakfast adding pie or cake or pickles.

After a lunch of this sort, it is natural for a child to feel drowsy and unable to study.

Heavy concentrated foods, eaten in poorly ventilated school rooms, overburden the child's system and make study difficult. A child may be undernourished not because he does not have enough food, but because it is the wrong kind.

Eggs and milk are needed to keep the child growing rapidly and should be given the preference over meat. Milk should be included in each of the day's meals. It may be taken in lunch box in a small sealed container or prepared in junkets, custards, or simple puddings. Fruits should form a part of every lunch.

Ripe Olives in Glass Containers Responsible for Recent Fatalities

That ripe olives in glass have been the cause of various fatal cases of botulinus poisoning is shown by the investigations of the Bureau of Chemistry, United States Department of Agriculture. The only case in which a tin container appears to have been involved was caused, not by olives as such, but by a relish containing minced ripe olives.

The trouble, the specialists say, is due to defects in the methods of pickling, packing, and processing the olives. The method of pickling usually employed is such as to favor the development of the bacillus botulinus if this organism be present in the olives. In most establishments the product when packed in glass is sterilized at about the temperature of boiling water, and this temperature is too low to insure the destruction in every instance of the bacillus and the toxin which it produces. The trouble, the specialists say, is not inherent in the glass container if sound olives be used and the packages are properly sealed and sterilized. Unfortunately, some of the packers in their anxiety not to break the glass containers do not always process them at a sufficient high temperature to insure the destruction of any dangerous organism. The poison would develop just the same in tin containers if they were not sufficiently processed, but as there is no danger of breakage in tin, there is usually no hesitation on the part of the packer about applying a sufficient degree of heat.

The bureau has suggested to the industry that all ripe olives in glass wherever located be carefully inspected and that any which show the slightest degree of decomposition be destroyed. It is further suggested that all ripe olives which have not been processed at a sufficiently high temperature be returned to the packers for immediate reprocessing at a temperature sufficiently high to insure complete sterilization. It recommends that similar action be taken in the case of ripe olives packed in tin, since it is known that in some instances an inadequate processing temperature has been used with the tinned article.

The specialists state that relishes containing minced olives of the type used in the preparation of the olive relish which caused one death from botulinus poisoning are likely to be dangerous, first, because of the possibility that low grade olives may be used in their preparation, second, because the processing may not be thorough, third, because the high flavor of the mixture is likely to mask the odor of decomposition.

It is a safe rule to follow in the case of all food products to destroy any article which shows evidences of spoilage. The department has not the authority under the law to compel the trade to reprocess its stocks as suggested, but believes that the industry should undertake such measures voluntarily.

THINGS THAT CANOT POSSIBLY BE FOUND

The woman who believes her grandchild is being brought up properly.

The girl who is as sweet-tempered as she appears to be in public.

The movie plot that is rational.

The self-made man who talks about his good luck.

The woman with pretty teeth who smiles in the dark.

The silk stocking that attracts much attention when it is empty.

A statesman who has never been called a politician.

HOW TO STAY SINGLE

Never speak to a pretty girl.

Never allow a homely girl to speak to you.

Allow the impression to creep out that you are tightfisted.

Create the impression that you are a brute and a bully.

Shave and change your linen once a month.

Be cynical at all times. Sneer at virtue; deride affection; laugh at love; hate children, belittle others; and exalt yourself.

Be uninteresting. Know as little as possible, and forget as soon as possible the information that does come to you.

Be as unsympathetic as a manufactured diamond, as cold as a restaurant dinner, as heartless as a ticket speculator, and as unromantic as a bath tub.

Never wear a garment that fits your person.

Never make a remark that fits the occasion.

Not Substitutes But Real Things

BEFORE the war the term "Bread" was understood to mean bread made from ordinary wheat flour. During the war it might have meant almost anything on which to spread butter or its substitutes. But what does it mean now?

At the time the Food Administration called for the use of substitutes in the manufacture of bread, so much publicity was given the ruling that the chances of a purchaser being deceived into believing that the article he carried home from the bakery as bread was made wholly from wheat flour was slim; and no objection was made under the Food and Drugs Act to the labeling and sale of the product, conforming to the Food Administration's rulings as bread.

The restrictions on the use of wheat flour in bread have been removed, and any product now sold under or labeled with the unmodified term "Bread," should, if brought within the jurisdiction of the act, be prepared from wheat flour only. If wheat flour substitutes are used, their presence should be clearly stated on the label. The same principle applies in the case of crackers.

This statement should make it very plain to every baker that the Department of Agriculture, which enforces the Food and Drugs Act, can prosecute where a bakery product is labeled bread, which is not made wholly from pure wheat flour. It does not mean, however, that bread cannot be made with the use of substitutes, but that the product should not be labeled bread if it is so made.

We sincerely trust that this does not accurately reflect the position of the Bureau of Chemistry, for if a percentage of corn flour mixed with wheat flour gives results so far as palatability is concerned, we know it gives results so far as food value is concerned, and there is no more reason why this bread should be branded showing corn flour was used in its manufacture, than that bread made from whole wheat flour should be branded wheat.

A Defense of Bread as Now Made

A Formal Protest of the Corn Milling Associations and Bakers on the Ruling of Bread

By D. W. Lackey, Secretary American Corn Millers Association

Among the many responsibilities of the housewife is the important duty of training the family in thrift.

The people of Holland, Belgium, and France have long been famous for thrift. Necessity, combined with good judgment, long ago taught the parents in these countries the value of thrift, and for generations, thrift habits have been inoculated in the minds of the children in every home. The home is the nursery of the nation, and if we want our people to be thrifty, we must teach thrift in the homes. We have had some reeent lessons in saving, but not enough to form the thrift habit. Our thrift stamps, war savings stamps, Liberty bonds and food conservation practiees all tend to teach us thrift, which, after all, means "No Waste."

As food is the most important material thing in the world today—thrift in food use is of primary importance. We are only beginning to realize the value of comprehensive food information.

It is the mother's duty as well as her privilege to train the children to respect food. We should begin with the infant. Give him the foods which are essential to his growth and development and see that he eats what is given him. We should not consult the child regarding what he wants, or does not want to eat. The mother is, or should be the best judge of what is good for her ehild. Never allow a child to play with food. Foor is to be kept elean and eaten to make happy, efficient men and women.

Since example is better than preept, the homemaker will best impress correct food habits upon the family through practicing them herself. Buy only the best and treat it as such.

The buying of foods is as important as the cooking and serving. Our wise home manager no longer looks for the eheapest—she demands the best. Her desire to buy in proper quantities and eombinations for best value has caused her to make a study of the entire food question. Efficiency demands that she continue to use foods wisely and without waste. Wisdom in buying, cooking, and serving American foods is certain to encourage the habit of proper respect for and use of foods in any family. The housewife will help her country and instill the American idea.

I have just been advised that a law has been prepared for enactment in California which would require the labeling of bread together with statement of percentages of their ingredients when it is not made entirely from wheat. We believe it will be just as fair to require the baker to state whether his bread is made from spring wheat, hard wheat, winter wheat, durum wheat or white wheat, as each variety of wheat certainly gives different results.

I have had oecasion to closely investigate several movements of this kind and almost without exception I have found them emanating from selfish motives and mainly a disposition to outlaw worthy competition through handieapping and discriminatory legislation or regulations. Certainly if a baker gives the public a pure wholesome bread and of a character that pleases the public taste and yields a maximum of nourishment, he should not be discouraged from doing this to benefit one class of manufacturers who supply

his raw material, and who happen to be influential and to the extent of presenting their positions so convincingly as to secure a recognition of this kind.

From a broad viewpoint, it would in our judgment be as equitable to require the labeling on the wheat loaf to indicate whether it was made from a superlative or short patent, a long patent or a standard patent wheat flour of a specific variety.

We hold the opinion that the term "Bread" is analagous. The 1917 edition of the new standard dictionary defines *BREAD* as follows:

1st. An article of food made of flour or meal; commonly raised with yeast or the like, kneaded and baked.

2nd. Food in general, also the necessaries of life. It defines *BREAD CORN* as "Grain from which bread is made, as wheat maize, rye, millet, etc." and *BREAD FRUIT* as, "The fruit of a tree of the South Sea Islands, when roasted resembling bread," and *BREAD STUFF* as "Material for bread; grain meal or flour; in the plural, such materials collectively. And *BREAD WINNER* as, "One who supports himself and others by his earnings; a producer."

It is therefore quite clear that the press report or the publicity agent of your department erroneously stated the public's understanding when he declared that "Before the war the term 'Bread' was understood to mean bread made from ordinary wheat flour." I am accurately relating facts when I say that before the war, and after the war, it has been the custom to buy and use the bread most acceptable to individual taste and physical comfort. It has always been a characteristic trait to patronize the baker who makes what the individual prefers.

I am prepared to submit conclusive evidences that no condition exists with corn flour or other corn mill bread materials which would in any way justify an official discrimination against their regular use in commercial breads. On the contrary, close observation and in fact metaphysical proofs exist which demonstrate an increased resistance against fatigue or the storing of energy reserve, through the freest use of corn bread and foods, sufficient to sustain men at hard labor from meal to meal without their becoming uncomfortably hungry. I have heard the same workmen say that wheat breads of the very light character produced from certain varieties of wheat would not sustain their strength. In fact they referred to it as "moonshine." That was a few years ago and before the bakers generally were increasing the substance of the average loaf through the scientific blending of corn flour or other materials with certain varieties of wheat flour.

Present bread manufacturing methods are the direct reflection of industrial sagacity. They reflect the response to public taste, a response to the demand for an appetizing variety. Modern bakers are alert to the ever increasing intelligence of the consuming public—the increasing demand for the greatest nourishment at the lowest cost. They are taught by our most influential agencies to seek it. On June 12th in his address in New York Mr. Barnes quoted a report compiled by the investigators for the Inter-Allied Food Commission and which contained the following:

"That the American public spends about 18 billions annually for food. Of this cereals (not wheat alone), with 38 per cent of the food value, account for but 16 per cent of the total expenditure. Bread, sugar, potatoes and fruits furnish 62 per cent of the food value, although only 31 per cent of the food bill goes for them. The remaining 69 per cent of the money is divided among meat, fish, eggs, milk, cheese, butter and lard."

Mr. Barnes said that a change of 10 per cent in these relations would cut three billion dollars a year from the country's food bill. He added, "Why not help our people to lower their living cost by better understanding and more accurate knowledge of food contents and food values. There is a fertile field here for our schools to till."

Advertising and distribution experience bring to me another handicapping influence that will come from the general operation of your department's interpretation of bread. It represents a broader viewpoint than that of our industry. It will cause a further decrease in consumption of bread. The influence is psychological but certain. The ruling suggests that fraud has been practiced in bread making. If bakers are forced to label each loaf with the quantity and variety of each material used and since your department defines bread as an exclusive product of wheat, the consumer will assume that as a substitute it must be tagged and sold at a discount, if the bread made exclusively from certain varieties of wheat does not exactly reproduce the best bread of pre-war days.

The public will to a certain extent abandon the use of bread. They will do so because our national pure food agency warns them that the good bread of the past was made from wheat. When the public is confused and constituted authority causes it, it is the disposition to avoid anything that suggests unworthiness. Every decrease in bread consumption increases the living cost. The present industrial unrest is mainly due to the high cost of living. The high cost of living is in part due to the decreased consumption of cereals and in response to the government's war emergeney appeals.

Recently a Chicago paper published a Department of Agriculture report which showed that the consumption of meat has increased 25% in our country within two years. Statistics recently compiled suggest that the average family spends $2.00 per day for meat as compared with 50 cents per day before the war. It was asserted that by spending $1.00 per day for meat and 10 cents per day for an increased amount of cereal foods, the same nourishment would be provided at a daily saving of 90 cents to the average family.

Every one knows that bakers will not for astute business reasons use deleterious materials but, on the other hand, will vie with each other in a friendly competition to produce the best bread. The popularity of their products, with its essential influence on patronage and profit, will properly define bread. This will encourage the consumption of bread and readjust our living costs to our accustomed ratio with the income.

COMING CONVENTIONS

National Association of Retail Grocers, Atlanta, Ga., May 1920.

The annual convention of the New York State Wholesale Grocers' Association will be held at Hotel Astor, New York City, February 25 and 26, 1920.

Annual convention of the Tri-State Wholesale Grocers' Association will be held at Harrisburg, Pa., on the 10th and 11th of March, 1920.

The Southern Wholesale Grocers' Association will hold its annual convention at St. Louis, Mo., May 11, 12, 13 and 14, 1920.

The world is getting so much better that even a poor and unimportant person can't get mixed up in a scandal without the world being informed of all the details.

What Is Bread?

IF you bought from your bakery a loaf of bread, would you feel that you were being deceived if you found out that 5% corn flour was used instead of 100% wheat? This is a question that has been interesting the Bureau of Chemistry and an interpretation was made by the Department of Agriculture May 15 that bread could not be sold as such, unless made completely of wheat flour.

Inasmuch as many bakers have for years been using a small percentage (around 5%) corn flour in their bread, there was a wide protest made on this ruling by the American Corn Millers Association, The National Association of White Corn Millers and several Bakers Associations. At the request of these associations Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, met with the above organizations in Chicago, July 3.

Secretary Lackey of the American Corn Millers Federation presented formal opposition to the Department's interpretation of bread. After this was read, the hearing began by Dr. Alsberg stating that there was no question in the ruling regarding food value, but that as housewives were accustomed to baking bread, when they purchase bread they are deceived if they do not get bread produced completely from wheat flour. The doctor raised the question that the consumer is entitled to know exactly what she is getting.

Mr. Guning, representing the National Association of White Corn Millers, took the floor, and strongly protested against the position in which they had been placed. Patriotically, the millers, at the urgent request of the government, enlarged their plants, increased their outputs to help win the war. He stated that his firm, the American Hominy Co., spent $500,000.00 in improvements as a response to this appeal. He added that the Wheat Corporation, at a later date, prevented the exportation of corn flour owing to its exclusive interest in wheat flour and, subsequently, without notice, canceled the substitution regulations and practically killed corn milling. Then when corn millers began to enjoy some pre-war returns of demand from bakers for corn flour the Department of Agriculture's ruling that "to be bread and sold as bread" it must be made from wheat flour, simply means further discrimination and practical ruin to corn flour millers.

Mr. Livingston, speaking for the Livingston Bros. Bakery and others of the Chicago Bakers Club, declared that to his own knowledge corn flour has been used in bread baking quite generally for fifteen or more years. Probably about 5%. Others also confirmed this condition.

Dr. Alsberg inquired as to whether such a practice as also the practice of some using corn starch was to insure greater water absorption and to produce more loaves with corresponding increases in profit?

Messrs. Grant, Livingston and Yaeger stated emphatically no. That several essential reasons existed and they were explained at length by Mr. Yaeger, who is a consulting baker's chemist. Mr. Yaeger explained that before corn flour, starch, Badex, or other corn by-products were used, it was difficult to produce bread that would keep fresh for 48 hours. He explained that bread shippers must have bread with sufficient moisture to be moist and palatably fresh for 48 or more hours. That corn flour or corn by-products produce a whiter loaf with other advantageous features. That from the bakers' viewpoint, he must produce better bread than the housewife makes or else he wouldn't sell his product. He explained that when the consumer uses bread every day in the year he would tire of the monotony of bread made from 99% wheat flour and that it is the intelligent practice of bakers to vary their baking formulas to insure an appetizing variety. That it has been his long experience that the buying public calls for popular makes or labels only when buying bread, and never calls for wheat bread. This was the unanimous understanding of all those present. Dr. Alsberg expressed a desire for substantiating evidence in support of this viewpoint and it was promised. Mr. Yaeger explained further that the use of corn flour flakes, or other starchy corn products or dextrin, plus material, stimulated fermentation in dough preparation, and while he is not yet ready to announce the detailed results of his recent research efforts he could say that for four months he has been producing bread of superior quality and giving the consumer a bigger slice through combining durum wheat flour with corn flour. That durum flour contains gluten in large volume and that while it is unmanageable alone and requires around nine hours for proper dough fermentation when used alone, that by mixing with corn flour the time of fermentation is brought down to five hours or to a saving of four hours on each baking. Durum being high in protein would also show higher food value when mixed with dextrin plus products. The bread analysis showed 1% higher protein and higher soluble carbohydrates content.

It takes from eight to nine hours to ferment durum flour and looking at it from standpoint of consumer, will prefer a loaf of bread made of durum if you can reduce your fermentation period to five hours by using a certain amount of dextrin plus much more yeast—plus dextrin, you will get a loaf of bread that will, in competition, shut out everything else in the city. In using corn flakes, grits, or meal, it must be gelatinized. That goes back to the corn flour proposition. I don't think that any baker would use any excess quantity—10% is all I would use. Can give further information—that it takes 6 pounds of fermenting material to handle 100 pounds of flour and with a pound of yeast on patent.

Dr. Alsberg stated that his department is not certain about the justification for using starch in bread baking, but no objection could be interposed against corn flour from the standpoint of food value in comparison with wheat.

Mr. Livingston stated that it is common knowledge that rye bread is 50% wheat flour and what would be the Department's attitude as to the sale of rye bread? Dr. Alsberg replied that rye bread probably couldn't be made any other way and really was not an interstate product Bakers present assured him that it is shipped interstate and Dr. Alsberg expressed the opinion it would not have to be labeled.

Secretary Lackey inquired as to whether such labels as "Butter-krust" or the like would sufficiently individualize bread as to eliminate the necessity for stating other materials than wheat? Dr. Alsberg stated they would not avoid the

necessity for labeling other contents than wheat.

Mr. Livingston: "From baker's point of view he has got to make the best loaf of bread to compete with his greatest competitor. Bread is about the only thing we can eat 365 days a year. Most successful practice is to change formula—but if he has to get a label—there isn't a housewife in America that says 'give me a loaf of wheat bread.'"

Mr. Yaeger: "We put on a new loaf in our neighborhood—just to bring up the bread business—a new taste. How can you make a new taste when you only have wheat flour to use.

Mr. Yaeger: "Why didn't we label bread before?"

Dr. Alsberg: "Before the war practically nobody was using 15 or 20% of corn. The average baker didn't buy a barrel of corn flour before the war."

Mr. Livingston: "I want to say that in our bread before the war we used a higher percentage of corn flour and corn products than we are using right now."

Mr. Genung: "I want to say we sold hundreds of thousands of barrels of flour to bakers for years before the war."

Secretary Lackey then suggested that it was apparently the opinion of all those present that corn flour has been used in bread baking and regularly for many years: That it is necessary for the variation of formulas, and economizing of fermentation time and that it does not impair food value; and that the necessity of competition with the housewife and bakers for the production of the best and most acceptable bread will certainly avoid the possibility of excessive use for the purpose of reducing production cost—are all apparent and good reasons for a modification of the Department's ruling. At least as it applies to corn flour, and made specific request for immediate suspension.

We seriously question whether the housewife cares whether or not the loaf of bread she buys contains a small percentage of corn flour. Corn was a staple American food long before wheat. Every one knows the food value of corn and no one questions it. When the housewife buys bread and knows it has not lessened in food value and is more palatable by adding corn than bread produced entirely from wheat, she is little concerned about being deceived. This having clearly showed that the only interest bakers had in using corn was to produce a better, more palatable loaf of bread, and when there was no question of lessening the food value it would seem as though lines are being drawn rather fine.

There is scarcely a food industry existing that is not in some way using something in the content. These additions are put in to make a better product, not to cheapen, or to deceive, for today the maker's name is the housewife's protection. The housewife is perhaps equally deceived when she buys jam, because sugar has been added, not that sugar is injurious or lacks nutrition, but because it is sold as jam.

Cake for example—where is the Solomon that can say what is cake and what is not? When is candy not candy? We feel quite sure the Bureau of Agriculture will see the injustice and hardship of discrimnating against corn, the king of domestic cereals, for it is of far greater interest to the public than any manufacturer.

The Hidden Powers of Fish and Cheese

By Jean Prescott Adams

With the advantages of fresh meat which are offered to the housewife, the opportunity for using fish or cheese with their respective combinations, is quite often forgotten. However, along about the middle of winter just after the holiday time, a craving is felt for something different and just here is the time to slip into the menu some fish and cheese combinations.

With the aid of the canning industries, fish and sea foods of various kinds are brought to our door in a cleanly, wholesome condition. The problem of keeping perishable goods is a grave one to the rural housewife. This problem is solved by use of canned goods. Purchased in large quantities, the housewife need never worry about the keeping qualities of either fish or cheese. Cheese is easily kept by simply coating the outside with paraffine so that no surface is exposed.

It might, perhaps, be interesting to learn a little more about fish, the method of canning and food value. Salmon canneries are located along the northern Pacific coast. When caught, the fish are immediately dressed and washed, then cut by machinery into lengths. These are placed in a can, which is immediately sealed and subjected to intense heat, giving the meat the proper texture and cooking the bones so that they will crumble. Some of the various kinds of salmon most commonly canned are Soekeye, Chinook, Red Alaska, Medium red, Atlantis pink, and Titan chum.

Tuna is not a substitute for salmon as has been commonly supposed, but a highly nutritious and appetizing sea food. The meat is practically as white as the breast of a chicken, and of very fine texture. The flavor really resembles chicken. It will meet with your approval as a meat to be creamed, used in croquettes or in fish balls.

Not only salmon and tuna may be used in appetizing dishes, but many other fish and sea foods are also pleasing. Lobster, sea clams and sardines may be satisfactorily substituted for meat.

But perhaps you have not thought just how important it is that fish and cheese be used as meat alternatives. something must be used that will equal meat in food value. Fish and cheese are high in nutritive value. Salmon, for example, contains 790 calories per pound and 21 per cent protein. With such high protein content it is a fitting substitute for meat.

The manufacture of cheese need not be explained to you who know it so well. Suffice it to say that the characteristics of good American cheese are these—clean flavor, pleasing to the taste, solid texture, smooth or waxy body of even color or perfect finish. The principal ingredients of cheese are — butter fat, casein, salt and moisture. The percentages vary, but are approximately protein and salts 30 per cent, butter fat 33 per cent, and moisture 37 per cent. When you know that cheese contains 2,055 calories per pound, you will readily see why it should be used more frequently.

For the first time in the history of Kansas the farm products and live stock raised this year exceed $1,000,000,000 in value. The annual report on farm production, just issued by J. C. Mohler, secretary of the State Board of Agriculture, shows the aggregate values to be $1,087,000,000.

Berry Boxes and Fruit Baskets

By F. P. Downing, Investigator in Marketing, U. S. Dept. of Agriculture

THE berry box or basket is a retail package going either directly or indirectly from the farm into the home. This fact, coupled with the evident deception in sizes of berry baskets made this package the first target for both state and municipal legislation. Several years ago a large number of sizes of berry baskets was manufactured. As many as five styles of short quarts, varying in capacity from 45 to 65 cubic inches were in common use. A very common type was the so-called wine quart of 57¾ cu. in. The standard dry quart basket of 67.2 cu. in. was almost unknown. In the absence of legislation, basket manufacturers in competing for business, tried to outdo one another in placing short baskets on the market. Conditions became so bad that the larger cities and many of the states enacted ordinances or state laws, standardizing the dry quart, dry pint and dry half-pint berry baskets.

Massachusetts was the first eastern state to compel the use of standard baskets; then New York State passed a berry box law, but provided for a 7% tolerance or variation. The grower and dealer took advantage of this large tolerance and demanded boxes holding but 62½ cu. in. In the West, Kansas enacted a law standardizing the liquid quart of 57¾ cu. in., a basket 15% short of the dry quart. Between 1911 and 1916 many of the northern states passed laws standardizing the berry basket. In the far West, California passed a law standardizing a half-pound and a three-quarter-pound basket and at the same time legalized dry measure baskets. As a result California today has more sizes of baskets than any other state in the Union. The recent action of the California legislature, however, will eliminate all sizes except the standard pint and half-pint baskets. Even the quart basket is not legalized.

The lack of legislation in many states, combined with conflicting state laws, interfered decidedly with interstate shipments of berries and other small fruits, with the result that Congress was finally appealed to for relief. The passage, on August 31, 1916, of the United States standard container act, to take effect November 1, 1917, has resulted in the standardization of the berry box throughout the entire country. This Act provided for standard baskets or other containers for small fruits, berries and vegetables, holding a dry half-pint of 16.8 cu. in., a dry pint of 33.6 cu. in. and a dry quart of 67.2 cu. in., and for other baskets holding multiples of the dry quart. The manufacture, sale or shipment of berry boxes not in conformity with the law, filled or unfilled, was declared a misdemeanor punishable by fine. The enforcement of the law was assigned to the Bureau of Markets, Department of Agriculture. This law held the manufacturer of baskets liable for their sale and shipment in interstate channels. Inasmuch as most manufacturers of berry boxes do an interstate business, the law has practically put a stop to the manufacture of short berry boxes for local use, as in most cases it became unprofitable for the manufacturer to make a few local baskets of non-standard size.

One of the best features of the federal law is the provision, which holds the manufacturer responsible for the size of his baskets. This is a great aid in the enforcement of the act. There are at least one-half dozen berry basket manufacturers, whose combined output of berry baskets amounts to over 150,000,000 baskets annually and the observance of the law by these few factories insures an enormous output of standard baskets. Basket manufacturers, however, are in favor of standardization, as it puts competition on a more equitable basis and cuts down factory costs. The federal law standardizes the capacity, but not the shape or dimensions of berry baskets and boxes. It would be almost impossible to adopt uniform dimensions for baskets inasmuch as such a proceeding would necessitate the elimination of several types of baskets that are entirely satisfactory to the trade. The accompanying illustration shows six common types of standard pint berry baskets or boxes. They are known to the trade as the oval pint, American pint, Hallock pint, St. Louis pint, Leslie pint and Western pint or tin top. Some sections of California also use a half-pound basket resembling a small lard tray for marketing raspberries.

According to reports received from basket manufacturers, about 300,000,000 berry baskets are manufactured annually in about the following proportions:

American and Oval baskets.	175,000,000
Hallocks	55,000,000
Tin Tops.....	32,000,000
Leslies	15,000,000
St. Louis....	9,000,000
Sixes	8,000,000

These figures for the year 1918 are perhaps a trifle below the average. The difficulties experienced by basket manufacturers during the war in securing labor and material were instrumental in reducing the factory output very appreciably.

The American berry basket is used throughout the eastern and southern Atlantic states, almost to the exclusion of all other types of berry baskets, with the exception of the oval pint. It is also used in some sections of the Mississippi and Ohio valleys. It is very popular and owing to its neat appearance is gradually replacing other types. In the berry sections east of the Alleghanies, berries are marketed chiefly in a 32-quart crate. In Florida and New York a gift crate is commonly used, but in the berry sections other than these, a 32-quart return crate, having a cover provided with hinges and hasp seems to be more popular. This same crate is used in packing 60 oval pints. The pint basket is not used as extensively in the East as on the Pacific Coast. Its use is limited chiefly to the marketing of raspberries. It is also used early in the season when the market is high for other varieties of berries.

A 24-quart crate is the prevailing type in Tennessee, Kentucky and some other sections of the Mississippi Valley. This crate is readily handled, carries well and is popular with the commission merchant. The writer is of the opinion that the 24-quart and 32-quart American crates should be standardized and that other sizes could well be dispensed with. Oswego, New York, uses a 36-quart crate, Delaware a 48-quart and Norfolk a 60-quart. The two latter crates are unwieldly and difficult to handle. A 16-quart crate is used at times, but not in large quantities.

The Hallock berry box is in common use in Michigan, Wisconsin, Illinois, Minnesota, Louisiana and in the states of Washington and Oregon. It is a square box with a raised bottom. The public, gener-

allay, is of the opinion that the bottom is raised for the purpose of deception. This, however, is not the case. In packing the baskets in crates, the upper layer is placed directly upon the baskets below without intervening trays or dividers, such as are used in American crates. Were the bottoms not raised about 3/8 in., the fruit in the lower layer would be crushed by the weight of the upper baskets. The Hallock box is less expensive than the American, usually costing about $1.00 per thousand less. However, it is not so strong a basket, and does not ventilate well. Often the lower layer of boxes shows the effects of this lack of ventilation. This latter difficulty can be corrected to a limited degree through the use of a double deck crate.

Hallock berry crates are made in three sizes—the 16-quart crate, the 24-quart crate and the 24-pint crate. The 16-quart crate is popular with the housewife around canning time when she wishes to buy a whole crate of berries. Only pint Hallock boxes are used in the states of Oregon and Washington. Growers claim that western strawberries do not carry well in quart baskets, owing to their soft, watery nature. There are two varieties of Hallock pint baskets, commonly known as the deep pint and the shallow pint, the deep pint being generally used for strawberries and cherries and the shallow pint for respberries and other berries that crush readily.

Tin top berry baskets are used by growers in California. This basket differs from other types, in having a metal instead of a wooden band extending around the top. Southern California uses a shallow tin top and Northern California, especially the Florin district, a deeper type. The one-half pound and three-quarter pound baskets have been the most popular types. Berries are marketed in single layer trays or crates, holding 15 of the shallow or 20 of the deep baskets. Three of these crates are usually nailed together on the sides with slats for shipping. The Leslie berry box is rectangular with the corners chopped off. It is used chiefly in Arkansas, Missouri, Southern Illinois and Colorado. This box seems to be growing less popular and is gradually being supplanted by the American or Hallock type.

The type of basket locally designated as "sixes" is only used in California. It is a shallow basket resembling a lard tray, holds one-half pound of raspberries and derives its name from the fact that six baskets fit into one drawer or compartment of the chest in which it is shipped. The standard chest has 20 compartments, holding 120 baskets. This type of basket will soon be a thing of the past, as it can only be used locally, neither crate nor basket being intended for long distance shipments.

It is believed that the American and tin top types of berry baskets are the most desirable styles. The Hallock box is not as desirable as the two just mentioned, but owing to cheapness, large quantities are still manufactured. A folding type of Hallock box used in the Northwest makes it possible to ship this basket to the grower in the flat. American and tin top baskets are nested in shipping and are packed in crates holding 1,000 baskets.

The following table contains suggestive specifications for berry baskets and boxes. A large number of other shapes now being manufactured might well be dispensed with.

Berry baskets are designed for berries, cherries and other similar small fruits. They were never intended for use as containers for tomatoes, peaches, apples and other large fruits. The practice of using berry baskets for this purpose is objectionable. Some dealers go to extremes in this measure and often fill the basket two-thirds full of paper and then place four or five tomatoes in the basket, usually one in the center and one in each corner. The sale of these articles by weight or count is far preferable.

"Small fruit baskets" is the term used in this article to designate the rectangular or square till baskets, varying in capacity from one pint to six quarts. These baskets are often called re-packing or display baskets. Fruit baskets, like berry baskets, are packed in crates for shipment to market. Three types of these crates are in common use. They are known as the (a) 6 basket carrier crate, (b) 4 basket flat crate, and (c) Western 4 basket square carrier crate.

The 6 basket carrier crate is a popular package for peaches and tomatoes in the southeastern states, particularly Georgia and Florida. It is designed to carry six 4-quart baskets in two tiers or layers of three each, the baskets in the lower layer being separated from the upper tier by a divider or tray. The crate has the inside dimensions 10x11¼x22 inches. The standard container Act compelled the manufacturer to make a 4-quart basket. Prior to the passage of that Act many of the baskets held from 3½ to 3⅔ quarts. About 8,000,000 crates are made annually.

Four-basket flat crates commonly designated as "flats," are used most exclusively in Texas, Mississippi, Louisiana and Tennessee for shipping tomatoes to market. Growers of these sections seem to prefer a smaller crate than the Georgia carrier. The crate is designed to carry four 3-quart baskets. The baskets are arranged lengthwise in one tier, two baskets being placed in each compartment of the crate. The manufacturers of these baskets, in complying with the provisions of the standard container Act, have increased the capacity of the baskets from 2⅔ to 3 quarts. The crate has flaring sides, is 13½ inches wide at the top and 11½ inches at the bottom. It is 4½ inches deep and about 20¼ inches long inside. The Texas Law requires a crate ½ inch less in width than that given. About 4½ or 5 million crates are manufactured annually.

The Western 4 basket square carrier crate, is a distinctly Western package. It is used extensively in the Pacific Coast states for shipping grapes, apricots, plums and other fruits. It is designed to hold four 3-quart square baskets, commonly known as 5-pound tin tops. These baskets were formerly made to hold 2⅞ quarts. In complying with the law, the manufacturer has deepened his baskets to hold three quarts. The baskets are approximately 8 inches square at the top, 6½ inches square at the bottom and 4 inches deep. The crates are 4½ inches deep and 16 inches square, inside measurement.

Berry boxes and fruit baskets are manufactured both by hand and by machinery. The wood used in the manufacture should be odorless and tasteless so as not to contaminate the fruits that are placed inside them. Gum, cottonwood, maple, basswood, beech and spruce are used quite extensively in the manufacturer of baskets. The logs, cut to the proper length, are steamed or boiled in large vats for about 8 or 10 hours. When the wood is thoroughly soaked the logs are removed from the vats and the outer bark taken off. The steaming or boiling places the wood in the proper condition for working, at the same time loosens the bark so that it can be readily removed. The log, with the bark removed, is

then placed in a veneer lathe and veneer varying in thickness from 1/15 to 1/40 inch, according to the variety of wood used and baskets desired, is turned from the log. Baskets cut from pine are usually 1/15 to 1/16 of an inch in thickness, while Western baskets cut from spruce are often 1/33 of an inch in thickness.

The process of putting baskets together is known as forming. Only damp or moist veneer can be used for this purpose. Two blanks are placed crosswise, the ends bent around the end of a metal form, around the outside of which a band has been placed. A truss ring or a follower is used in keeping the blanks in the proper position while the outer band is being stitched or tacked to the edge of the basket. The hand-made basket is tacked, the machine-made, stitched. Stapling machines can be operated either by foot-power or machinery. Fast operators can form and staple over 4,000 baskets a day. An ordinary operator ean turn out from 2,000 to 3,000 baskets in the same length of time. After the baskets have been formed and stitched, they are stacked in bundles and inspected, the defective packages being sorted out. The baskets are then sent to the dry kiln and dried for 12 to 14 hours at a temperature varying from 160 to 180° Fahrenheit. They are then packed in crates, which will hold a thousand each.

Prior to the passage of the United States standard eontainer Act berry boxes and fruit baskets were made in a very large number of sizes. Over 50 types of these baskets have been examined and vary in capacity from one-half pint to 6 quarts. The accompanying illustration shows over 30 sizes of these baskets. It is to be noted in partieular that there are 7 sizes between 2 and 3 quarts. No uniformity existed either as to shape or capacity and the baskets approached one another so closely in size that it was impossible for the purchaser to know even the approximate capaeity of the basket. This led to many unfair practices and often to deceit and even fraud when fruits and vegetables were marketed in these containers. When the United States standard container law took effect, manufactnrers of these baskets were forced to make the same only in multiples of the quart. This resulted in the elimination of many sizes, such as the 1½-quart, 2⅓-quart and 3½-quart baskets. Baskets differing from one another by quarts can readily be distinguished by the eye, as shown in the illustration. Not only does the standardization of these baskets enable the manufacturer to cut down factory costs, but their use forces the shipper to pack his produets only in baskets of sueh size that they can be readily distinguished from one another by the eye.

The Almond as a Substitute for Meat

While the Department of Justice, through the State Fair-Price Commission and the Division of Women's Activities, is undertaking a "Save Money on Meat" campaign, it is an opportune time to call attention to the California almond, the nutritive qualities of whieh are declared by indisputable authority to be four times greater than those of any eut of beef, and, when properly prepared, equally pleasing to the palate.

A word concerning the almond. It has required thousands of years for the people of today to aequaint themselves with what was well known to the dwellers of southeastern Europe and northwestern Africa, namely, the value of this ancient fruit as a staple article of diet. For the almond, today brought to its highest perfection by the orchardists of California, is the earliest fruit of which the world has record. See Genesis, 43:11, "Take of the best fruits in the land in your vessels, and earry down the man a present, a little balm, and a little honey, spices, myrrh, nuts and almonds."

For the reason that its value as a life sustaining product should for so long have been forgotten is easily comprehended. With the decline of the various tribes by which it was for centuries husbanded, and their subsequent emigration westward, not only was its cultivation neglected but, with the possible exception of Spain, throughout Europe it was suffered to grow wild, neither the climate nor the soil of western Europe being adapted to its proper development. When, finally, in a few districts, first for its exqnisite foliage and afterward for its fruit, it was permitted to return to a state of partial perfection, the production was so limited as to in no manner snggest its possibilities as a staple article of food, and, consequently, for hundreds of years it was regarded solely as a condiment for the gratifieation of the taste and made its appearance chiefly during the holiday season.

It is only recently that the wonderful possibilities of the almond have been recognized by the publie and with the world for a market the orchardists of California, where it is cultivated most extensively, and reaches its highest state of perfeetion, are profiting accordingly. As an indication of the growth of the almond industry in California, last year's crop yielded twice the quantity harvested in 1918.

FLOUR FACTS

The hard winter flours of the present crop have lower absorption quality than those of the several previous crops, and in a letter to the Bakers' Helper, J. A. Wilson of the Southwestern Laboratories says that with the exception of some Colorado flour, he does not find any of this year's flour absorbing as mueh as 60 per eent, with the exception of the clears and low grades. Speeifically, the first elear has an absorption of 60; the 100 per cent straight 59; 95 per cent straight 58.5; long patent 58 and short patent 57.5 per cent.

The gluten eontent of the short patent averages 9.75 per eent; of the long patent, 10 per cent; the 95 per cent straight, 10.25 per cent; the 100 per cent straight, 10.50, and the first elear, 11.50 per cent. The ash content ruus from .35 in the short patent to 70, in the first clear. "The baking quality of this weaker flour," says Mr. Watson, "is quite remarkable when due care is exercised in its use, and I am having tests daily of loaf volume very mueh above standard, and the flavor and texture of the bread is good, thus showing that the quality of the gluten probably has more to do with the making of good bread than has the quantity of the gluten, so that even soft winter wheat flour has possibly been underestimated for bread-making value."

The California raisin crop will net to the growers about $33,000,000 this season, which is about double what it has been any previous year. W. M. Giffen, president of the California Associated Raisin Company of Fresno announeed. For the first time in its history the growers have sold the entire crop before January 1.

Sweet Potatoes Given New Name by Advertising

A Campaign Which Dubs Them "Sugarspuds" Seeks to Overcome Disadvantages Brought on by Traditions

WE have always called them sweet potatoes, but we won't much longer—not if they are Nancy Halls or Dooleys, or other improved varieties, and if we buy the well-advertised brand. We'll call them "Sugarspuds," instead. "Sugarspuds," a coined name, has been made into a trade-mark which has been registered. The advertising of Sugarspuds will begin simultaneously with the shipment of Southern storage stock this season. The advertisements will be placed in newspapers of selected Northern cities. Street car cards will be used, and retailers will be supplied with hangers. Recipe books are being published for consumers.

All in all, a serious co-operative effort will be made to popularize that hitherto modest sister of the Irish potato, the sweet potato.

These are big days in the sweet potato industry, and co-operative educational advertising is a logical development. For many years the sweet potato labored under a tremendous disadvantage compared with the Irish potato. The Irish potato could be stored economically and sold during a year-round consuming season. The sweet potato couldn't; it began to deteriorate as soon as it was taken from the ground. The sweet potato season was short. About the time a family got well into the habit of using sweet potatoes the season would end.

This condition has been radically changed by the development of efficient curing methods which automatically extend the storage and consuming seasons. In addition there has been improvement in varieties. Many curing and storage plants have been erected in the South. All this looks toward greater production of sweet potatoes, and expanded consumption with development of the Northern market a natural move.

A national selling organization, the North American Fruit Exchange, co-operated with several high-class shippers of cured improved type sweet potatoes, and the present advertising and sales campaign was planned. It is being joined by other shippers whose stock meets the quality standard. The cost of the advertising campaign will be met by a small per crate charge. Shippers co-operating in the enterprise will use a special "Sugarspuds" label on all crates in addition to their regular label.

Why Consumers Should Use Sugarspuds

The series of advertisements has been illustrated by F. G. Cooper, the cartoonist. The illustrations are humorous in type. The copy appeal to the housewife strikes various notes. The high sugar content of these improved sweet potatoes is urged as one solution of the sugar problem. The sweet potatoes are declared an excellent food for children, because children require a liberal supply of sugar in their daily diet. That "Sugarspuds" are a low-cost food of highest nutriment value is also urged. The flavor is touched on. Sugarspuds are called "the most delightful sweet potato you ever tasted." The copy is brief and direct.

"While beef is high," relates one advertisement illustrated by a capricious animal jumping over the moon —"Sugarspuds are one of the lowest cost and highest food-value products on the market. This improved Southern sweet potato is richest of all in sugar content, fine flavor and nourishment. Buy a bushel crate from your grocer. They will keep until used.

A second Cooper illustration depicts a terrible animal closely pursuing a fear-stricken mortal—"Consuming the consumer." Another shows a group of lusty, open-mouthed children shouting, "We want Sugarspuds!" Another pictures the whale which ate Jonah expressing the wish, "I'd like to trade him for a 'Sugarspud'."

In every advertisement the consumer is urged not simply to buy "Sugarspuds," but to buy a bushel of them. Right at the beginning of sweet potato advertising, the advisability of urging quantity buying of the product is recognized and acted on. Similarly at present apple interests in advertising encourage consumers to buy by the box.

In striving thus to change the buying habit of a great body of consumers, advertisers in a very real way are a force to lower living costs. The old-time custom was to purchase farm products in the original intact package. Thus apples were bought by the barrel, as packed at the farm, while the staple potato was purchased in a sack. The barrel and the sack were originally retail containers. In the present era, however, there has been a radical drift into small-quantity buying. It's the day of the costly paper bag habit, of the small 25-cent and 50-cent purchase which hardly furnishes a mouthful. The paper-bag habit is the essence of wasteful extravagance—it can't be anything else because of the extra burden of service it imposes on the retailer. Advertisers actively encouraging quantity buying of vegetables and fruits are performing a national service at this time.—Printers' Ink.

Reports on more than 6,300 food and drug cases, including both criminal prosecutions and seizures, terminated in the Federal courts, have been published in the form of notices of judgment since the enactment of the Federal food and drugs act, according to a recent statement of the officials of the bureau of chemistry, United States Department of Agriculture, in charge of the enforcement of that law. This number represents only instances of flagrant misbranding or adulteration in which, in the opinion of the officials, it was necessary to prosecute the party responsible or seize the goods in order to check the practice. Thousands of other forms of minor misbranding, say the officials, have been corrected by serving notices on the parties responsible without recourse to formal legal action. The food industries in many instances voluntarily have changed trade practices of long standing.

The violations of the act on which the court actions were based cover nearly every food product from alimentary paste to zwieback.

It is possible to determine in advance whether an egg will bring forth a cock or a hen, according to Robert Idensart, a prominent Parisian scientist. Male eggs are heavier, he says.

Domestic Science for the American Farm Woman

By EDWARD B. MITCHELL, Office of Information, Department of Agriculture

A DEMAND for fuller knowledge, for knowledge that will enable the women to make their homes healthier, their lives brighter, is the most striking note in replies to questions of the Secretary of Agriculture addressed to farm women in all parts of the United States. Information is wanted on every subject, from the management of gasoline engines to the care of babies; and although the sceptic may question whether agricultural and domestic science can ever justify these women's unbounded confidence in its ability to revolutionize the conditions of life, one must remember that many things which the dweller in cities takes for granted are in the country still rare or unknown luxuries. The farm woman striving to do her work with the same equipment that her grandmother used finds herself confronted with greater difficulties. The advance in the ease of living elsewhere affects her chiefly by drawing away those from whom she might otherwise obtain assistance. She feels herself at a disadvantage from which she suffers both in body and spirit. It is this that is responsible for much of what there is of discontent in the letters.

This thirst for information can not, of course, be satisfied with bulletins alone. In many cases, indeed, the usefulness of these as a means of general education is severely criticized. It is asserted that those who need them the most read them the least, and that even those who do read them are not likely to make radical innovations in their accustomed methods, or to invest precious money in expensive improvements, merely on the cold, impersonal recommendation of the printed page. They ask for ocular demonstration in their own or their neighbors' homes. The value of such demonstration work is, of course, too well known to educational authorities to need discussion here. As a result of the Smith-Lever law, recently enacted by Congress, it is probable that, within a few years, $8,000,000 will be spent annually by the various ernment, in just such work in agriculture and domestic science. It is interesting to note, however, the emphasis which women who never heard of the Smith-Lever act lay upon the need for lectures, for traveling, for educational moving-picture exhibitions, for demonstrations of labor-saving devices—for anything and everything, in short, that will bring home to the people the possibility of better living.

Even to enumerate the suggestions which are put forward as a means to this end is out of the question. Many are sound and thoughtful—many, indeed, have already been adopted by the department, the agricultural colleges and the experiment stations—and others are naturally vague and impracticable. The point of importance is that the farm women want to learn; they want to improve their homes, but they admit frankly that today they don't know how. Those who do know want their husbands to be told also. With a touch of bitterness, many women declare that attention has been concentrated upon improvements in agriculture; the value of scientific care of live stock is thoroughly understood by progressive farmers who do not give a thought to conditions in their own homes; barns and wells and stables are planned with a keen eye to minimizing the cost of labor, but no attention is paid to the waste of labor indoors. The farmer invests capital in his farm; it does not occur to him to invest capital in his home. It simply does not occur to him. The very women who protest most strongly against the facts deny that stinginess is responsible. Their husbands do not understand, they say, do not realize that the house as well as the farm is a business, the management of which may be either progressive or antiquated.

As labor has become scarcer and more expensive, the department has aided the farmer with information about labor-saving devices and labor-saving systems of farm management. His wife asks for the same assistance. Lack of help inside the house means that the farm woman must employ herself incessantly with the most monotonous and routine tasks, from which prosperity brings no relief. Indeed, in the eyes of some workers, prosperity merely means more work. "The farm," writes one Michigan woman, "is run for the benefit of the farm and not the family. Of what use is it to buy more land to raise more corn to feed more hogs to buy more land?" Abundant crops need hands to harvest them, and the farm woman must feed the hands. To many this is the last straw. Already overdriven, they object to having the additional burden of the hired help thrust upon them; they object to the presence of the men at their tables and in their families. For them the labor problem is two-edged. They can get no help themselves, and the help their husbands have they must care for. Moreover, it is said, the character of farm labor has deteriorated to such an extent in recent years that it is no longer possible to take the hired man into the family. He remains an intruder and an affliction which, both as housewife and mother, the farm woman earnestly longs to be rid of. How she is to do this is, in its way, almost as much a problem as how to get the domestic help she herself requires; but in a number of cases cooperation is suggested as a possible remedy. If the farmers of the neighborhood would unite, it is argued, to provide quarters for their men, they could be taken care of just as cheaply and with far less trouble than under the present method of billeting them upon their employers' families.

Thus, because of the lack of modern labor-saving devices and proper heating, lighting, water and sanitary systems, of the inability to obtain assistance when it is imperatively demanded and the burden of outsiders, "overwork" is a common and widespread complaint. To this is added, in many cases, the depressing conviction that the work all goes for nothing; that is, there is no substantial evidence of appreciation in the form of cash. The proceeds of the chicken yard and the vegetable garden, usually regarded as woman's domain, are not credited to her individually, but are lost in the general farm income. In consequence, the farm woman is disposed to resent this outdoor work as an imposition, and instead of developing to its fullest extent what might be a considerable source of profit, she permits her interest to remain at the minimum. Although the Depart-

ment of Agriculture can not very well interfere with the domestic arrangements of a farm household, it is evident that if the results of woman's work took a form as tangible as ready money, much more satisfaction would be derived from the doing of it.

In this connection it is significant that agricultural authorities have repeatedly stated that the average American farm does not maintain a sufficient quantity of live stock; that more milch cattle and more poultry could be raised with advantage not only to the grower but to the whole country. From these letters, however, it is evident that where the men are fully occupied in the fields and no help is available in the house, the already overworked women, on whom will fall the burden of caring for the additional cows and chickens, will not take kindly to the suggestion. If an adequate supply of labor, male or female, could be directed to the farms, better management in house and field alike would be more possible. For this reason many urge the establishment of official employment bureaus to secure a better distribution of the available labor, and in particular to divert the stream of immigrants from the cities to the country.

That the immigrants need this official persuasion is perhaps due to the same causes which lead a number of American farm women to express discontent with farm life. Of these causes, the chief are loneliness and overwork. Loneliness, isolation and the lack of social and educational opportunities form the text of many letters. These come from every part of the United States, and there is no evidence to show that the sentiments expressed in them are more general in one section than in another. It appears to be a question of the individual farm rather than the country or State. Probably much of this loneliness is the direct result of the overwork which confines the women to their homes, cuts them off from their neighbors, and deprives them of all sense of contact with the world at large. The men do not suffer from this so much, it is said, since their business dealings necessarily bring them into contact with new faces and new ideas. The lack of good roads is also held responsible for increasing the difficulty of social intercourse, and one woman complains that changes in agricultural practice have sent light horses, suitable for driving, from the farm. She has, therefore, no way of getting over the country and must perforce stay at home, whether she has the time to go out or not.

This isolation proves objectionable to many women not so much because it is a bore, but because it leaves no opportunity for development and improvement for themselves and their children. The question of education looms large in their minds, but on this point there are considerable differences of opinion, and the tendency to consolidate the rural schools is cordially condemned by a number of correspondents. To many "the little old red school house" is evidently dearer than advanced theories of education, but there are other than sentimental reasons for the objection to substituting for it the modern central school. The long journey to the latter involves exposure which, in winter weather, is, in the mother's eyes, too severe for young children, no matter how adequate the service of the school wagons may be. Moreover, many farm women fear the evil influence of towns and miscellaneous company upon their children. One Vermont woman complains specifically, for example, of the fact that in the school wagon her boys and girls must listen to unsupervised conversation for several hours each day. On the other hand, many correspondents realize that their insistent demand for a modern education for their children can not be met by the old-fashioned, ungraded, unequipped rural school. They are, therefore, as urgent in advocating the consolidated school as their neighbors may be in opposing it.

But whether in the "little old red schoolhouse" or in the central school the women want their children prepared for the practical aspects of life. Under the present system, it is argued, the schools educate the young away from their life work. A few content themselves with urging the abolition of the so-called "frills" in the district schools, but the majority look to the establishment of agricultural high schools in the rural districts as a more efficient remedy. These schools, it is said, should not only supply the needs of those who, seeking a higher education, can now obtain it only in towns where they quickly lose all sympathy with farm life, but should also provide instruction in agriculture and domestic science. The importance of domestic science is dwelt on particularly as the only remedy for the tendency on the part of girls to despise all housework as a species of degrading drudgery. This attitude makes them not only inefficient but unwilling as well. With greater knowledge would come greater satisfaction in the performance of their duties.

What the farm women want for their children they want for themselves as well, but since they can no longer go to school they ask that the school be brought to them. The demand for practical information to be supplied through the medium of bulletins, personal demonstrations and lectures has already been noted, but the desire for knowledge by no means stops here. The farm women look to educational extension not only to help them in their work, but to aid them in finding pleasure outside of their work. Courses of reading planned by the government, with circulating libraries to render the necessary books accessible to all, and the utilization of the local schoolhouses for lectures and social purposes are favorite suggestions in this connection. It is true that to some a circulating library suggests nothing more important than easy access to the latest fiction, but in general there can be no doubt of the sincerity and prevalence of the yearning for a culture that will open their eyes to the beauty and joy of life.

That such culture requires effort to receive as well as to give is appreciated by the great number of correspondents who ask from the government not so much material assistance in the shape of libraries, instructors and meeting places, but leadership in organizing to obtain these aids for themselves. Cooperation is the remedy that suggests itself to many minds, for the evils, mental and physical, that spring from the isolation, hard work and limited means which are the controlling factors in so many of the farm women's lives. In the organization of women's clubs and cooperative societies of every kind, it is pointed out government agents should be the natural leaders. Not only are they familiar with the methods that have proved successful elsewhere, but their position gives them a certain influence in the community not so likely to be enjoyed by a private individual, for it may be said in passing that throughout the letters the note of respect for Uncle Sam's wisdom is apparent. Properly organized and directed, it is expected that the women can do much to help themselves. On the purely material side the successful operation of such cooperative institutions as creameries and cheese factories, has suggested the extension of the principle to such domestic matters as washing and baking. In

sections where creameries are common a favorite idea is the establishment of a cooperative laundry to be run in connection with it. Advocates of this plan usually ask of the department only information—the cost of putting such a scheme into operation, the number of patrons necessary, etc. Butchering, canning and the feeding of hired help are also mentioned as fields for profitable coöperation. As has already been said, however, many correspondents look to organization to do more than lighten the domestic drudgery. By its aid they hope to end the isolation and loneliness, the monotony and intellectual barrenness of their lives.

In singular contrast to this spirit of sturdy self-reliance is the attitude of most of the correspondents who discuss questions of finance. Few observe or even appear to be aware of the existence of the distinction between borrowing to obtain productive improvements and borrowing as the easiest method of obtaining a convenient supply of spending money. The need for "cheap money" is voiced vigorously, but not many appear to concern themselves with its repayment. Over and over one comes upon the naive assertion that if the writer's husband could only borrow a thousand dollars or so at a low rate of interest she could have many comforts now lacking. That ultimately the thousand dollars must be repaid as well as the interest, does not apparently enter into her calculations. On the other hand, it is undeniable that the difficulty of obtaining sound and justifiable loans on reasonable terms works real hardships in many cases. Coupled with this grievance is the popular belief that the producer receives far too small a proportion of the value of what he produces.

These problems belong to the field of general agriculture and are therefore, strictly speaking, outside the scope of the present inquiry. The fact, however, that in their replies to the Secretary's letter so many housewives discussed these topics, stating expressly that whatever benefited the farmer benefited them, is significant. These women do not consider themselves a class apart, with interests distinct from those of the general community. They do not ask for special privileges. They are eager to secure a healthier, broader, better life for their families and for themselves. Broadly speaking, they believe that the government can help them in their struggle in two ways—by economic legislation that will make agriculture more profitable, and by advice and education that will enable them to make the best of what they have.

Cold Pack Method of Canning and Preserving

WE find no reference in any of the articles on the cold-pack method of canning as to the danger of any poison being engendered by this process. In fact, the method, if carefully followed as directed by the United States Department of Agriculture, is said to be an easy method that requires the simplest equipment, *assures complete sterilization,* and also guarantees an improvement over other methods in the flavor and appearance of the vegetables and fruits.

While for convenience in handling tin cans are preferred by many, writes Grace M. Smith, others prefer the glass jars, which, it seems to us, are the best to use.

All fruits and vegetables can be canned by the cold-pack process, and full and explicit directions can be obtained by applying to the United States Department of Agriculture.

H. I. Weed, in her article on the cold-pack process of canning, gives the following directions, using glass jars:

"I. Pick all fruit and vegetables as early in the day as possible. Can these vegetables or fruits *the same day as picked,* making canning necessary in small rather than in larger quantities in some instances.

"II. Clean, sort and grade, putting like quality, shape and size together in the same cans. Do not can spoiled fruit, for canning never improves, but simply conserves the material.

"III. Blanch or scald the fruits or vegetables the required length of time, as stated in the accompanying chart. This process shrinks their substance, starts the flow of color, removes objectionable acids, and softens the fruit or vegetables.

"IV. After the vegetables or fruit have been in the blanching pan the required length of time, remove immediately and plunge or dip quickly into a pan of cold water. This sets the color, stops the cooking, and the sudden change from scalding temperature to the very cold does much toward killing the bacteria which may be present. We ourselves could not stand such a change, and the bacteria are far more delicate than we are.

"V. Your jars should have been tested, as previously stated, before the day you are ready to use them. Put the cans and their tops in the water bath when you start to heat the water, thus bringing the temperature of the glass gradually up to boiling, so that when the cans are filled with the vegetables or fruit and returned to the sterilizer, they will not break, because of the sudden change in temperature.

CANNING SCHEDULE

	Fruit or Vegetables	Length of Time for Blanching, Minutes	Hot Water Bath, Minutes
1.	SOFT FRUITS		
	Apricots		
	Blackberries		
	Blueberries		
	Dewberries		16
	Raspberries		
	Strawberries		
	Sweet Cherries		
	Plums		
	Grapes—Grape Juice		20
2.	SOUR BERRY		20
	Cranberries		
	Currants	1	16
	Gooseberries		
	Sour Cherries		
3.	HARD FRUITS		
	Rhubarb	1½	20
	Apples		
	Pears		
	Quinces		
	Apple Cider		
	Pineapple	3	
4.	CITRUS		
	Oranges	1½	12
5.	SPECIAL VEGETABLES		
	Beans	2 to 5	120
	Corn—on or off cob	5	180
	Okra	2 to 5	120
	Peas	2 to 5	120
	Pumpkin	10	60
	Squash	(if to be used as veg.)	60
	Tomatoes	1 to 3	22
6.	ROOT AND TUBER VEGETABLES		
	Beets	6	
	Carrots	5	
	Parsnips		90
	Sweet Potatoes	5	
	Turnips	6	
7.	VEGETABLE GREENS, SPINICH AND OTHER GREENS	15 to 20 (in steam)	90

"VI. After the cold dip, pack the vegetables or fruit into the jars (ou

(Continued on page 30)

THE "WHY" OF THE PIE THAT DELIGHTS

Nearly Every Dealer Sells SIMON PURE

Armour's
"Simon Pure" Leaf Lard

Made in the good old-fashioned way—pure leaf lard rendered in an open kettle.

Makes good old-fashioned pies, cakes, biscuits, golden-brown doughnuts—the kind that "melt in your mouth." No indigestion when "Simon Pure" shortens the pastry. Easily recognized by its beautiful crinkled appearance and by the Armour Oval Label—"The mark that takes the guesswork out of food buying"—on the pail.

ARMOUR AND COMPANY

CHICAGO

Beware of "Scraps of Paper"

EUROPE'S SUPPLY IS SHORT

Government statisticians at Washington in the Department of Agriculture have found that during the war the number of cattle, swine and sheep in nine European countries have fallen off heavily—11 per cent on cattle, 53 per cent on swine and 12 per cent on sheep.

To quote the summary from the report:

Cattle decreased a little more than seven millions in the European countries and increased a little more than sixteen millions in the other countries named. The loss in number of swine in the European countries amounted to approximately twenty-four and one-half millions, as compared with a gain of approximately seventeen and one-half millions in the other countries. The decline of sheep in the European countries was approximately seven and one-half millions and the increase in the other countries approximately four and three-fourths millions.

Old Gentleman (to boy, fishing)—"Caught anything, sonny?"

Youngster—"No; but I expect to when I get home."

which have been fitted the tested rubbers), filling the jars full except in the case of peas, corn and beans, when one-fourth-inch is left for expansion.

"VII. *a.* Add one level teaspoon salt to each quart of vegetables, filling cracks and corners with boiling water.

"VII. *b.* Fill cans of fruit with hot syrup, the density of the syrup being governed by the fruit used—and the prevailing price of sugar.

"VIII. Screw Mason tops tight and give one-half turn back. For jars of the Lightning type with glass tops and wire bails, snap the upper bail into position, but do not put down the second bail.

"IX. Place jar in hot water bath, setting it on a rack, with the water one-inch above the top of the jar—so that there is even circulation around, above, and under the can.

"X. It is desirable to have the water boiling when the cans are immersed. If it is not, do not begin to count the time of sterilization until boiling begins, that is, until a few bubbles are bursting on top. Keep the boiling continuous throughout the period.

"XI. Remove promptly when the required sterilization period is up. Snap the lower bail down—having the jar wrapped in a cloth, to prevent breakage from drafts.

"XII. To test for a perfect seal, turn the jar on its side. If a straight line of bubbles goes from any point in the rubber to the bottom of the jar, air is gaining access to the center of the jar. When jar is cold, loosen the bails and lift the can by its cover, if the cover does not come off the seal is perfect. These faults, if they do occur, can be traced back to an imperfect rubber or jar. Do give them thorough tests.

The Manufacturer Who Maintains Preferential Prices Harms

Makes It Possible for Chain Organizations to Cut Price of Advertised Goods

By J. A. Ulmer

President, The National Retail Grocers Association

THIS period of unrest has been an opportune time for the extreme of freak methods of merchandising. Prominent among new competition is the establishment of chain-store systems. While I do not believe that the chain store, cash or carry, serve-self or Piggly-Wiggly are going to remove the well-established service store, yet they, by their methods, are going to have a great tendency to demoralize the retail business. Their chief weapon for obtaining business is the practice of cutting the price of well-advertised brands of merchandise. This practice necessarily causes the independent merchant to discourage the sale of these commodities, and instead use his efforts on a more profitable article.

It has come to the notice of the retailer that there are certain manufacturers who are granting secret rebates to these large quantity buyers, and yet these same manufacturers expect the small dealer who pays the long price to compete with these concerns, whose chief object is to destroy legitimate competition, in order to create a monopoly for themselves. Once having been successful, it is obvious that the manufacturer who lends aid to this unfair system is only paving the way to eliminate himself from business; having served a useful purpose he is not necessary any more as far as they are concerned.

It is well to reflect for the moment as to the possibilities of the outcome of these conditions. I fully believe that it behooves every manufacturer who has the welfare of equal opportunities for all in mind to think well before he grants special concessions to large quantity buyers, unless he lays his proposition open to any one, so that we all are placed on the same level and would have an equal opportunity to own our goods as cheaply as the "cut price" merchant.

This is a serious proposition with the retail grocer. The manufacturer or wholesaler who does not recognize in this unfair practice of preferential prices the possibility of trade demoralization is standing in his own light. The retail grocers who have gone on record for direct buying only did so in self-defense, so as to enable them to preserve their own business. For years these ruinous "cut-throat" competitors have gradually made inroads upon the trade that believed in the distribution of commodities through the proper and well-established trade channels, namely, from manufacturer or producer to the wholesaler, then to the retailer, and from the retailer to the consumer.

The Retailers' Desperate Remedy

The retailers have appealed to the wholesalers and manufacturers in vain, and as a last resort, many of them have organized buying exchanges, and retailer owned wholesale grocery houses, and are now being damned by some of the wholesalers and manufacturers for doing so themselves, when in fact, these same wholesalers and manufacturers are in reality responsible for these conditions, as they paid no attention to the retailer when he complained about this unfair advantage which had been taken of him.

The members of the National Association of Retail Grocers believe that the great majority of the manufacturers and wholesalers want to be fair, and it is these interests that we are appealing to. It ought to be your duty as an association to go on record to condemn such unfair practices, as have just been outlined, and work out a plan that would be equitable and just to every factor in the trade.

If, in the estimation of the manufacturer or wholesaler, large quantity buyers are entitled to a better price then it is your duty to inform the trade as to the exact terms, so that a small quantity buyer may use his efforts accordingly. If a retailer is a one case buyer, and it is a fact that by buying your products in large quantities he can get a better price, do not keep him in the dark about it, but let him know the exact truth as to the prices and terms. If you do not do so, and place some large quantity buyer on the jobbers' list, he will soon find it out, and in self-defense he is going to discourage the sale of the products of such a concern.

Correctly Labeled
Truthfully Advertised
Properly Sold

—that is the story behind the marketing of the wholesome, nutritious and economical food product—

HEBE

HEBE is pure skimmed milk evaporated to double strength enriched with cocoanut fat. It contains the body-building proteins, sugar and mineral salts of skim milk *plus* the heat and energy value of finely-divided, easily digested vegetable fat.

The label tells plainly that HEBE is "A Compound of Evaporated Skimmed Milk and Vegetable Fat." It is advertised and sold as a distinctive product—serving in the home as an auxiliary to the dairy milk supply for use in cooking and baking. It is not to be used in place of milk for infant-feeding, and the label so instructs.

Ideal conditions of cleanliness surround the production of HEBE, from the testing of raw materials to the final sterilization of the product in the hermetically sealed can. The daily use of HEBE means a definite household saving.

Today's food situation, and particularly the relation of HEBE to that situation is discussed in the literature that we have published especially for those concerned in food affairs. Send for copies of "Today's Food Problem" and "HEBE—Its Dietetic and Economic Value". There is no charge for these—address 2409 Consumers Bldg., Chicago.

THE HEBE COMPANY

Chicago **Seattle**

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of AMERICAN FOOD JOURNAL, published monthly at Chicago, Illinois, for April, 1920.

State of Illinois, County of Cook, ss:

Before me, a Notary, in and for the State and county aforesaid, personally appeared C. A. Patterson, who, having been duly sworn according to law, deposes and says that he is the Editor of the AMERICAN FOOD JOURNAL, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Congress 14, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Patterson Publishing Co., Chicago, Ill.

Editor, C. A. Patterson, Chicago, Ill.

Managing Editor, None.

Business Manager, C. A. Patterson.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.) Patterson Publishing Co., C. A. Patterson, 926 Argyle St., Chicago, Ill.; H. F. White, 108 South La Salle St., Chicago, Ill.; J. McEwen, 117 South Taylor St., Oak Park, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

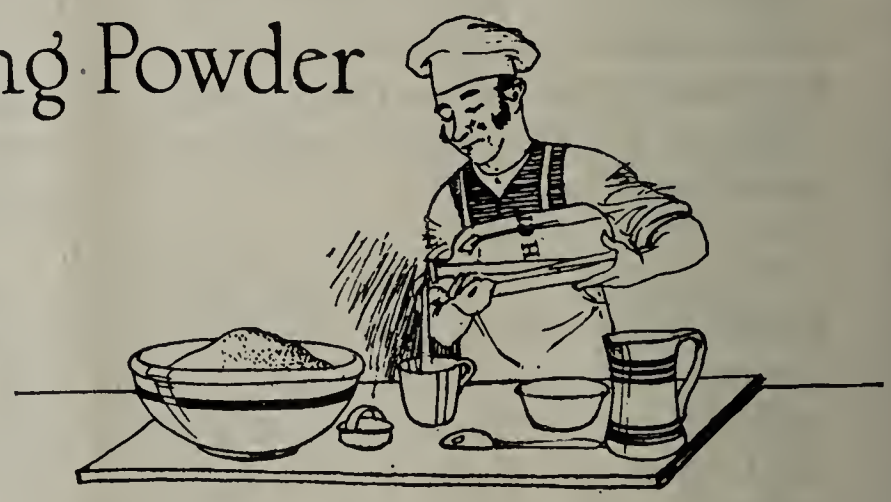
C. A. PATTERSON.

Sworn to and subscribed before me this ninth day of April, 1920.

ANTON O. LANDES, Notary Public.

(My commission expires April 26, 1922.)

Before we had Baking Powder



The oldest form of baking powder was sour milk and baking soda. Various substitutes came to take the place of the lactic acid which the sour milk contains—in 1837 in England, for example, it was hydrochloric acid.

And of all the strange ingredients that have gone into food in the history of cooking, what could be more startling than hydrochloric acid!

The uncertainty of this method, to say nothing of the actual danger of using a corrosive poison, makes this one of the most interesting chapters in the study of leavening agents.

From that time until the production of Ryzon was a long stride. Ryzon, the Perfect Baking Powder, combines pure, healthful ingredients with scientific accuracy, economy and dependability.

The Ryzon level measure

Ryzon is packed in full 16 ounce pounds—also 35c and 20c packages. The new Ryzon Baking Book (original price $1.00), containing 250 practical recipes, will be mailed, postpaid upon receipt of 30c in stamps or coin, except in Canada.

RYZON
THE PERFECT BAKING POWDER

GENERAL CHEMICAL CO.
FOOD DEPARTMENT
NEW YORK

If You Are Interested in Restaurants

whether public or industrial or institutional, by all means subscribe to THE AMERICAN RESTAURANT, a magazine for eating places.

Every type of restaurant is covered by articles written from actual experience.

$2.00 PER YEAR

The American Restaurant
38 So. Dearborn St.
CHICAGO

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

Rumford

THE WHOLESOME
BAKING POWDER

insures whiter, sweeter and lighter cake and bread—it raises the baking just right, and adds to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

RUMFORD CHEMICAL WORKS,
Providence, R. I.

L.71 10.17

Puffed Wheat

For Your Bowls of Milk

As an ideal food, morning, noon or night, Puffed Wheat is chief of Puffed Grains.

It is whole wheat steam exploded—puffed to eight times normal size. Every food cell is blasted, so digestion is easy and complete.

It comes to you as toasted bubbles, thin and fragile, with a fascinating taste.

It supplies whole-wheat nutrition in its most delightful form.

Puffed Rice

For Berries—For Ice Cream

Puffed Rice is a daintier product, with a taste like toasted nuts.

It is rice grains puffed to airy morsels, thin as tissue. It is a food confection.

Mix it with your berries. Serve with cream and sugar. Use like nut meats on ice cream or in home candy making.

The texture is so fragile that it fairly melts away, but it leaves a wish for more.

Corn Puffs

For Exquisite Flavor

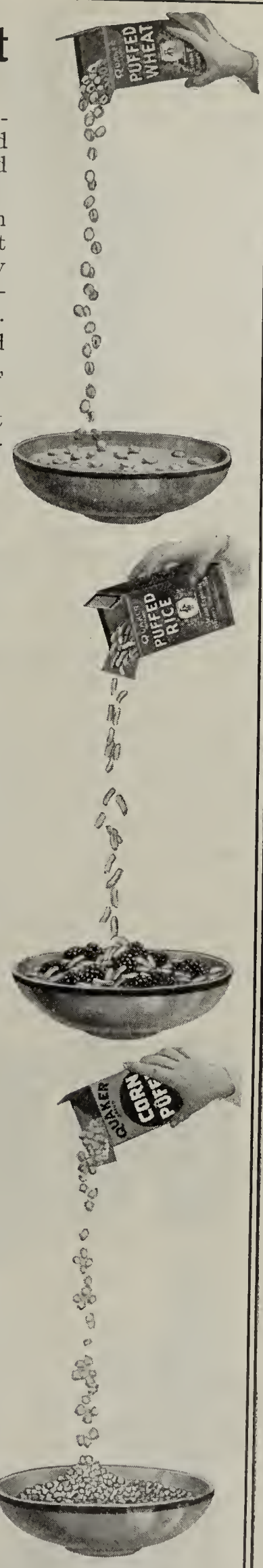
Corn Puffs is made from hominy. Tiny pellets are super-toasted, then puffed to raindrop size.

It is fairy-like in texture, and the flavor is exquisite.

Serve like other Puffed Grains. Or crisp and lightly butter for children to eat dry.

All these grains seem tidbits, yet all are scientific foods. No other cereals are so fitted for digestion. None make such all-hour foods.

In these summer days keep all three kinds on hand.



PUFFED WHEAT PUFFED RICE CORN PUFFS
PUFFED RICE PANCAKE FLOUR
A New Puffed Grain Delight

The Quaker Oats Company
Sole Makers

3322

Let Nothing Spoil

Heat, dirt, improper handling, flies, insects, and rats, or mice are the greatest food wasters, states James Foust, director of foods, Pennsylvania Department of Agriculture.

Keep Perishable Food Cold

Keep perishables cool, clean and covered.

The moment meat, milk, fish and eggs are allowed to get warm they begin to spoil.

Bacteria and germs multiply rapidly in slightly warm food and quiekly make it dangerous or unfit to eat.

Keep perishable food in the coolest, eleanest place you ean provide, preferably in a good refrigerator or ice house, but at any rate, in eovered vessels suspended in the well, or in the eoolest clean plaee in your cellar.

Dry eold is a better preservative than damp cold.

Keep Food Covered and Clean

The dust particles in the air carry molds and germs.

Meat, fish and milk are ideal breeding gronnds for such germs. Keep your food covered so that these bacteria and germs will have as little chanee as possible to get on your food.

House flies, better called "typhoid flies," are among the dirtiest things that enter our homes. They fly from privies, sewers and manure heaps, carrying filth on their feet, which they deposit on any food on whieh they light. Frequently germs of typhoid fever are carried by flies in the filth on their bodies and in their excrement (fly specks).

Ordinarily cleanliness demands that flies be kept out of our homes and away from our food.

Health protection makes it essential to banish flies. Keep all food covered, or at least screened from these carriers of a deadly disease and filth. Destroy flies by every possible means.

Guard Food Against Vermin

Rats and miee destroy millions of dollars worth of food and other property every year in homes, on farms and in business establishments. Many rats harbor the germs of bubonic plagne. Trap and kill them. Look upon every mouse as an enemy to your property.

Eradicate roaches and house ants.

Keep Weevils Out of Cereals

Keep your food where such pests cannot reaeh it.

Keep houschold pets away from food.

Store Vegetables and Fruits Properly

Don't let fresh vegetables or fruits wilt or lose their flavor or begin to rot beeause they are handled carelessly. Keep perishable vegetables in cool, dry, well-aired, and for most vegetables, dark rather than light places.

Learn how to store potatoes, cabbage, root erops, fruits and other foods so that they will keep properly for later use.

Fruits

Come in Jiffy-Jell

Jiffy-Jell desserts are real-fruit dainties.

Each package contains a bottle of liquid fruit essence.

We crush the fruit, condense the juice and seal it. So you get the fresh-fruit taste.

* * * * *

The flavors are rich and abundant. Jiffy-Jell desserts seem filled with fruit.

Yet the whole dessert costs less than the fruit alone would cost to give an equal flavor.

Millions Enjoy Them

Millions have adopted these new-grade quick gelatine desserts.

Compare them with the old styles. Jiffy-Jell would bring you a new conception of these healthful, economical dainties.

Lime-fruit flavor makes tart, green salad jell. Mint flavor makes mint jell to serve with meats.

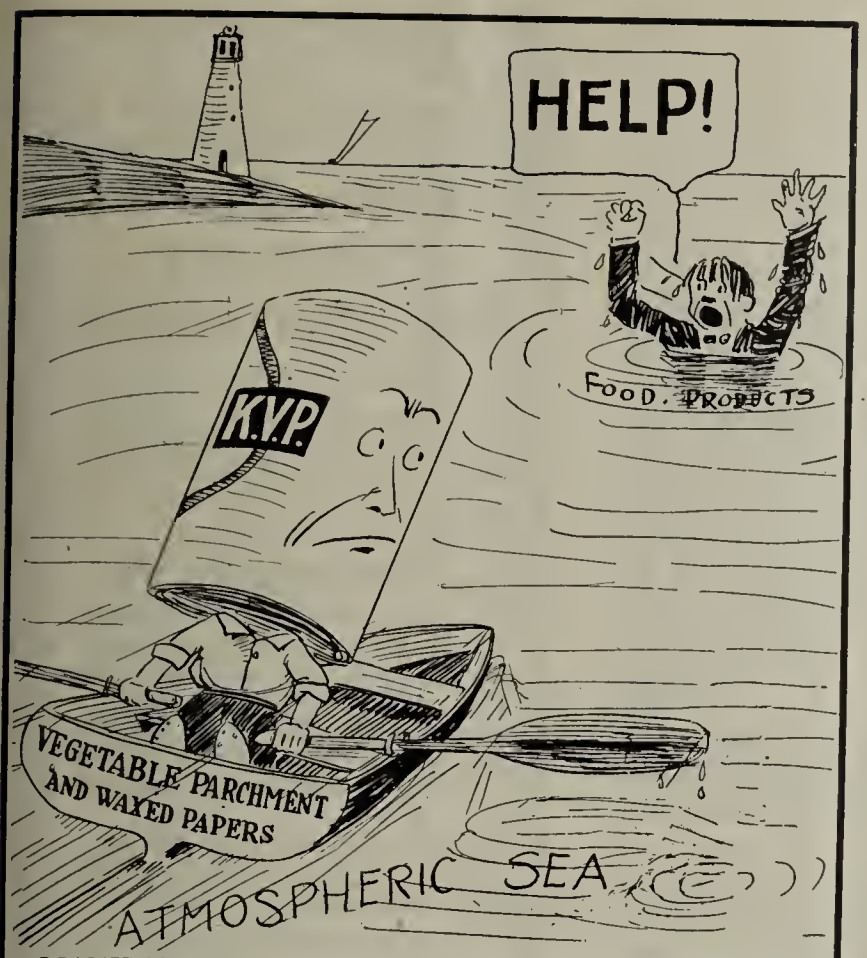
10 Flavors in Glass Vials

A Bottle in Each Package

Strawberry	Cherry	Loganberry
Pineapple	Lemon	Raspberry
Orange	Coffee	Lime—Mint

Jiffy Dessert Co.

Waukesha, Wis.



MANY FOOD PRODUCTS THAT WOULD PERISH

in the Atmospheric Sea before being sold and consumed are rescued by KVP vegetable parchment and waxed papers. Jump in—the boat's **dry!**

Kalamazoo Vegetable Parchment Company

Kalamazoo, Michigan

"World's Model Paper Mill"

Makers of Waxed and Vegetable Parchment Paper

Manufacturers Attention!

Have you a ready outlet for your products?

Are you seeking an Export Market?

Have you satisfactory domestic representation?

Let's get together. We can put your goods in market channels in double quick time.

Beaver Industrial Corporation

90 West Street, New York

For the Price

Of 3 Chops — Or 7 Eggs

You Get a 35-Dish Package of Quaker Oats

The large package of Quaker Oats serves some thirty-five average dishes. That means delicious breakfasts for one person for a month.

The package costs 35 cents. That's about the cost of three lamb chops or of seven eggs at this writing.

Think of that. Three little chops will buy you thirty-five servings of the greatest food that grows.

It Buys You 6221 Calories

That large package of Quaker Oats yields 6221 calories—the energy measure of food value. It takes seven pounds of round steak to yield that many calories.

And here is what those calories cost at this writing in some necessary foods:

COST OF 6221 CALORIES	
In Quaker Oats	35c
In Average Meats	$2.80
In Average Fish	$3.10
In Hen's Eggs	$4.35
In Potatoes	70c

Many common breakfasts cost ten times Quaker Oats for the same calory value.

Yet the oat is the food of foods. It is almost a complete food. It yields 1810 calories of energy per pound.

Quaker Oats forms the ideal breakfast. And what it saves will help you pay for costlier foods at dinner.

Many who omit this dish are being underfed.

Quaker Oats

The Extra-Flavory Flakes

Make this great dish delicious. Quaker Oats is flaked from queen grains only—just the rich, plump, flavory oats.

We get but ten pounds from a bushel. You get the cream of oats in this brand without an extra price.

15c and 35c per Package

Except in the Far West and South

Packed in Sealed Round Packages with Removable Cover

Extravagance and Waste Keeping Prices High

Get our heads out of the clouds, get back to earth and eliminate all extravagance and waste!

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"Based upon aetual observation in handling the food problems of the state," says Director Foust, "we are living in an abnormal atmosphere and while there may be profiteering by some of our dealers, yet most of the responsibility for the present high priees of food stuffs rests with us and extravagance and waste are our greatest faults.

"Last fall, in a certain market in this state, a farmer placed on display his supply of roasting ears at 18 cents a dozen. A short distanee away, in the same market, another farmer, selling the same grade of eorn, asked 25 cents for a dozen ears. The farmer selling his corn at the higher figure, quickly disposed of his stock, women rushing by the stand where eorn was sold for 18 eents, to purchase at 25 cents. The first farmer finally raised the price of his corn to 25 cents and within half an hour he was sold out.

"If two shoe merchants, offering the same grade of shoes, place their shoes on sale at different prices, the women and men will patronize the shop where the highest prices are asked.

"I admit that the neeessities of life are high, but it is the things that we can get along without that really cost the most money. Let us do without the things we do not absolutely require, buying only the things we need and the cost of living will drop at once.

"The waste in the average home, in the average hotel and restaurant is enormous. If we will eliminate this waste, forego the things we do not absolutely require and get baek to sane, simple living again, the major portion of the high cost of living problem will have been solved."

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BEG YOUR PARDON

The March issue contained an article entitled, The Vital Necessity of Right Feeding for Children, the charts used in illustrating this article were furnished by "The Association for Improving the Conditions of the Poor, of New York City.

The article in the March issue on Peanut Oil was written by F. B. Anderson, and was reprinted from the December issue of the *Oil Miller*. Through an error proper eredit was not given the author or the *Oil Miller* magazine.

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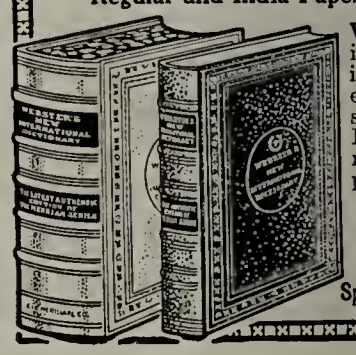

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Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

POPULARIZING FISH AS A FOOD

(*Continued from Page 9*)

president of the American Museum of Natural History, and a number of other distinguished scientists.

One of the first discoveries to be sought will be the link between the fauna of the deep-sea and the land, which the scientific world seeks to solve. It is here the scientists will make their first investigation, and the results, so obtained will be given to the world, which seems, the scientists say, a most baffling enigma.

The ordinary average annual production of small flocks of hens given good care is commonly estimated at 10 dozen eggs per hen. Two ordinary hens for each member of the family will supply about 20 per cent more eggs than the average city family now consumes.

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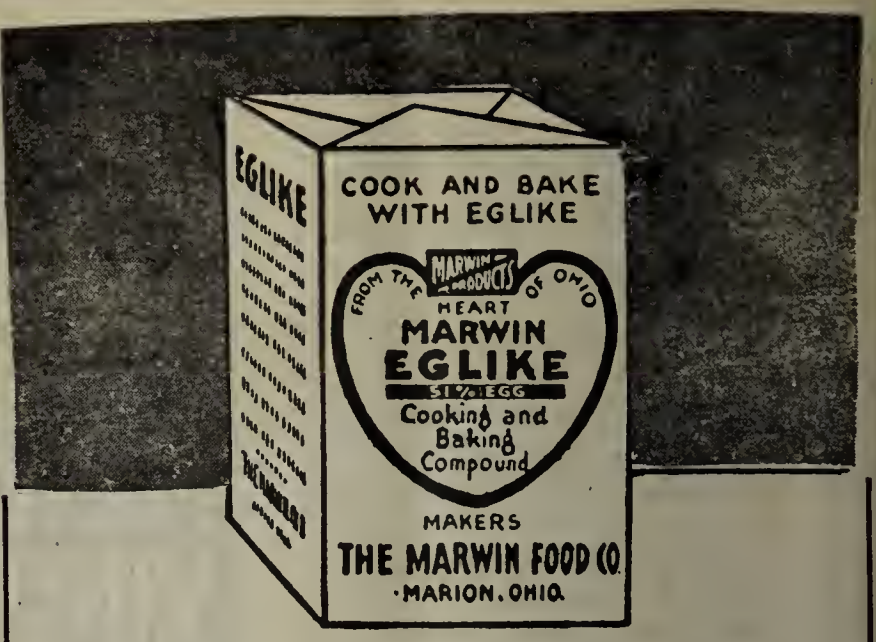

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THE AMERICAN FOOD JOURNAL

The Present Status of Vitamines

Food Poisoning

Candy—Its Place in the Diet

The National Shell Game

Interesting Truths About Yeast

Rice is Still America's Cheapest Food

MAY, 1920

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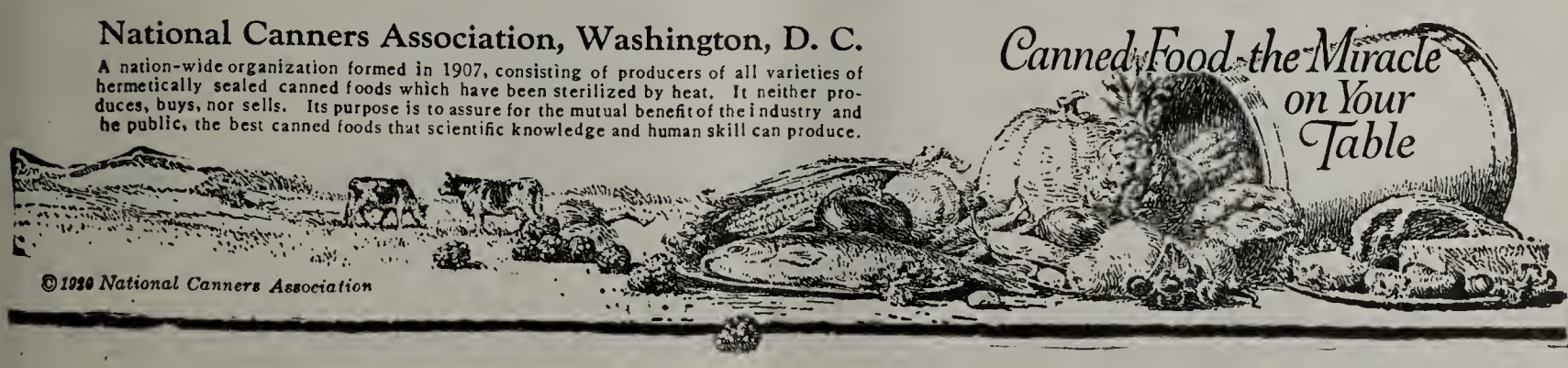

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THE AMERICAN FOOD JOURNAL

Vol. XV MAY, 1920 No. 5

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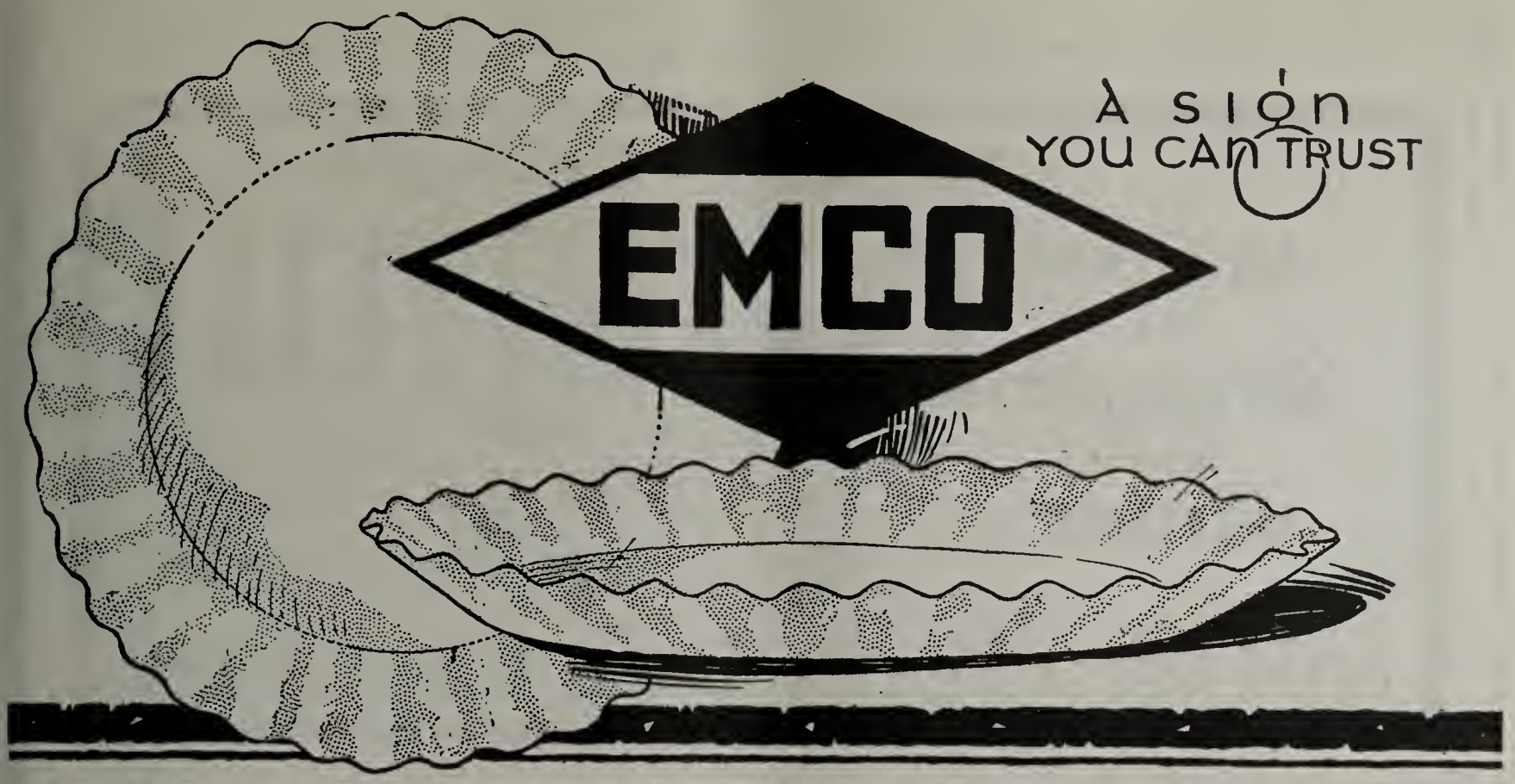

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THE AMERICAN FOOD JOURNAL

Vo'. XV CHICAGO, MAY, 1920 No. 5

The Progress of the American Institute of Baking

Address of Dr. H. E. BARNARD,

Director American Institute of Baking, Before the New York State Wholesale Bakers' Association

WHEN I addressed the American Association of the Baking Industry I spoke of the Institute as an infant in arms, with no record of achievement but with glorious prospects for the future. Today I am glad to bring to you from Minneapolis the assurance that our infant of a few months ago is now a lustly child, active, vigorous, and all ready to make something of a mark for itself in the baking world. You will be interested in knowing something of the child's growth and of his present stature. The Institute has its home in excellent quarters, provided and maintained by Dunwoody Institute. Our laboratories and offices are on the same floor as the laboratories and lecture room of the School of Baking and yet the two organizations are entirely independent. Our only associations come through the lecture room, where our chemists give daily lectures to the School of Baking and in this way set up a close relationship with the young men who next July will go back to the bakery not only trained in the science of bakery practice, but with a full knowledge of what the American Institute has to offer the baker.

We have divided the space provided us into eight rooms. Each laboratory has its office, and the Technical and Service Laboratory includes both a chemical department and a model bakery, in which we have installed spccial apparatus, designed and built to fit our need. The scope of the work which the Institute will undertake is so broad and the field so little studied that we are sometimes appalled by the task before us. So many problems await solution that it is not easy for us to determine those of major importance and of greatest need. In the beginning, however, we find it necessary to collect all the data available on the subject of the cereals, the flours, fermentation, enzymes and baking.

Technical Data

The search we have made of the literature reveals a surprisingly small quantity of good technical data. If it were not for the excellent material which has been collected and published by the Bakers' Journals and Trade Papers, we should have a very meager library, and in view of the fact that so little data is available, we are determined to collect for our library all the material which can be secured. This data is coming to us from the State Experiment Stations, which have studied the cereals, and in some cases done some really valuable work in improving the quality and character of wheat. It is also coming from the laboratories of a few of the large mills and bakeries, where special work has been carried on.

The amazing thing about the baking industry is the success which has attended him in his efforts to make a good loaf of bread. In no industry has the trained worker mastered more completely the art of handling raw material.

The bakers' success in developing the modern loaf which has come out of the practice of countless thousands of bakers throughout hundreds of generations, compels us at the Institute to wonder sometimes whether or not the scientist can in a few months or years pick out the flaws and point out the processes by which the better loaf, which is the modern bakers' ideal, can be produced. Some of the important subjects to which we are already giving attention are first, comparative study of the many different types of sweetening agents offered the baker during this time of sugar scarcity.

Sugar Substitutes

These sugars and syrups have been called "sugar substitutes." I do not like to think of them in that sense for they are not substitutes, in the proper meaning of the word, they are new sweetening agents of real value, which when properly made and properly used should have a permanent place in the bakers' formulae.

What I have said of the sugars applies with equal force to the shortening materials. There is no reason why animal fats should be used in baking except the fact that they give better results. The vegetable oils and fats, properly used, are as good shortening agents as the more expensive animal fats. The only thing which the baker lacks is a more intimate knowledge of how to use the newest shortenings. It will be our purpose first, to evaluate these shortenings so that relatively cheap materials will not be sold at an unreasonable price, and then, if possible, we shall study their effect on

(Continued on page 28)

The National Shell Game

"Let Us Standardize on a Few Honest Containers," the Experts Say, "and Stop Deception and Waste"

By A. H. Ulm

THE closer you look, the less you will see, is an axiom of the sleight-of-hand operator.

Yet we all have exceeding confidence in the discerning power of the human eye. The housewife relies upon it almost wholly when marketing; so do most food merchants when buying. Of all our parts the eye is probably the greatest creature of habit. It is ever inclined to see what it is accustomed to seeing, even if what it "sees" isn't there.

When the war and the remoteness of the South Sea Islands sent the prices of spices skyward, the average consumer of black pepper scarcely realized the difference. More curious still, the average consumer balked when he did realize it.

The reason was that black pepper and other spices were bought "sight unseen" in shaker boxes that sold for 5 or 10 cents a box. The average consumer continued to get the same style and size of box at the same price. The contents depreciated, but the container didn't.

This picture exposes a few methods by which people are sometimes duped when they buy by measure. To the eye of the casual buyer the lettuce baskets in the picture seem to be of the same size. The difference that really exists is illustrated by the dozen heads of lettuce left over when the contents of the basket at the left are poured into the basket at the right.
The reinforced implement at the upper left is a double-ended measure, legalized by Congress for use in the District of Columbia. The section filled with yams holds exactly half a peck. Below is a peck measure. When the half-peck measure was filled twice, and its contents poured into the peck measure, three yams were left over.
A container may be of honest surface dimensions, but of dishonest bottom dimensions and therefore of dishonest shape. The baskets containing string beans are of the same surface dimensions. Yet one contains sixteen ounces of beans; the other one is narrower at the bottom and contains only thirteen. Instances like these show why the housewife should buy produce by the pound.

When the box contained four ounces or more, which was the usual content, the manufacturer was required to print on the container a statement of the volume contained. But when the content went below four ounces, as with the higher prices they frequently did, no such statement was required.

Some manufacturers tried to equalize container and content, only to find the larger and partly fabricated boxes. This was because the eyes of consumers insisted on estimating quantity by size of container, even when a statement of quantity was printed on the box.

The government was appealed to. But an inquiry into the law showed its hands to be all but tied. The Department of Agriculture, through the Bureau of Chemistry, did exercise its right under the law to require that all food packages containing a half ounce or more of product bear a statement of quantity of content. It appealed to the manufacturers to go farther by voluntary action and reduce the size of containers. Most of the manufacturers agreed to do so.

You can't ordinarily see through a pepper box, but you can see through a glass bottle. Yet there was a similar experience with regard to flavoring extracts. When they went up in price, many manufacturers continued to turn out what looked like the same 10-cent and 25-cent bottles. The difference was taken care of by reducing the interior dimensions of the bottle, and the trick was done so well that the difference was disclosed only by careful inspection.

Rarely was the camouflage due to dishonesty. It was "put over" because it saved arguments and because retailers found that the average consumer when choosing between a strictly honest and a somewhat dishonest container took the latter—due to force of habit and reliance on the eye.

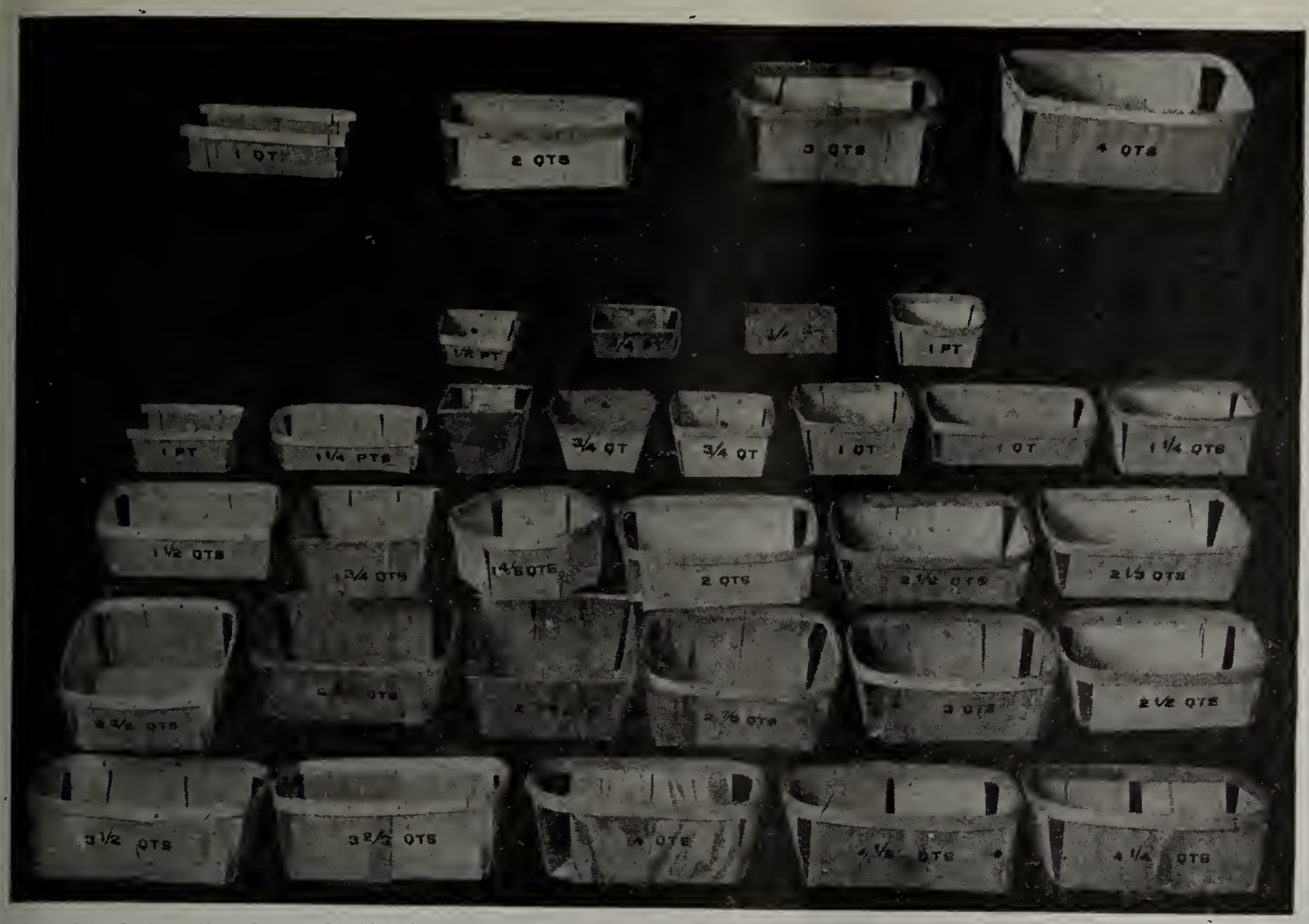
The eye is most often deceived perhaps by containers that give full or reasonable view of their contents. Even government experts often are obliged to use delicate testing apparatus in determining inequalities or deficiencies in such common containers as berry boxes, grape baskets, hampers and crates.

"Here are two orange boxes," said one of them the other day. They were on the floor of his office only a foot or two apart. "Do you see any difference in size?"

"Not the least."

He laid his ruler across the one on the right hand. The width was 11¾ inches; the depth was the same. The box on the left measured up a full 12 inches in width and depth.

"The difference seems insignificant," said the official. "But it isn't. Put one hundred and seventy-five oranges into each box and you couldn't tell by sight or feel any difference between the sizes of those oranges. Yet those in the small box would weigh ten per cent less than



Here's what national standardization can do. The four baskets at the top of the picture have supplanted all others shown below, except the half-pint and pint boxes, and two or three times as many more. The fewer sizes perform the service better, at less cost, and with far greater satisfaction.

those in the larger box. Oranges have been sold from each as being of the same size and grade. Even commission merchants didn't notice the difference.

"More than three hundred thousand boxes of the smaller size were put on the market by a single manufacturer last year. When I asked him why he did it, he replied:

" 'Certainly not because I want it, but because my trade demands 'em.' "

His trade demanded them because some one, moved by outright dishonesty, had found that the deception could be worked, thus giving a 10 per cent margin of profit over more scrupulous competitors. Others had to resort to the practice to meet the unfair competition. Of course, in time the small box would become the accepted standard; but before that time arrived some shipper would cut off another quarter of an inch and thus start another cycle of deception, and so on add infinitum.

Such cycles, together with multiform local customs and—so far as there are any—many contradictory laws, have caused the problem of containers for fruits and vegetables to be one of the hardest the government is trying to solve.

"There are as many varieties of cabbage crates as there are varieties of cabbage," says one of the experts who has been investigating the subject. "Five or six, maybe fewer, standardized crates would be sufficient. Their adoption would do a great deal more than prevent deception. They would save waste both in manufacturing the boxes and distributing the food they carry from producer to retailer or consumer."

The same confusion exists, with a few exceptions, throughout the whole realm of packagedom. The only way it can be fully removed is for Congress to exercise its constitutional power to fix the size, styles and strength of those containers in common commercial use that are amenable to standardization.

But here we run into a quite curious circumstance of history. In fixing the powers of Congress, the Constitution says:

"To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures."

The first part of that authorization which amounts to a demand, has been carried out in detail since the government was formed; to a large extent the last has been ignored.

Congress has not yet affirmatively fixed even a basic standard of weights and measures for the country as a whole. In truth, the only positively legalized standard of weights and measures we have—or rather don't have—for the country as a whole is the metric system. Congress made the metric system legal in 1866, but only by indirect action has it ever legalized the ancient British system in general use.

The reason? Chiefly local customs, sectional prejudices, individual habits—all functioning usually under the cloak of state rights!

No doubt the constitution makers had in mind largely the basic standards of weight and measure, like those represented by the pound and the bushel, as usually determined by the scale and measuring implement. In that day we followed the British system as we do now, but that system had not then been reduced to uniformity. Early Congresses could have defined the pound and the bushel only at the cost of breaking into many local customs. So Congress didn't, holding that the function should be exercised by the states.

BETWEEN 1830 and 1840, the government, in collecting customs and taxes, often found itself perplexed as to what really did constitute a pound, a yard or a bushel. Then Congress authorized the secretary of the treasury to fix standards for the government's own use. He went about the job scientifically, and did it successfully. Base standards carefully made were stored away for future guidance.

Meantime the states were following the old customs of the colonies. To promote uniformity among them, Congress directed the secretary of the treasury to send each state, as a gift rather than an injunction, duplicates of his base standards.

The states now prescribe the same basic pounds, yards and bushels that are employed by the federal government, but are free to change them at will.

Echoes of the old lack of uniformity constantly result from the efforts of the states to define bushels in terms of pounds. The legal weights per bushel of sweet potatoes, for example, range from forty-six pounds in North Dakota to sixty pounds in Maryland.

Recently, when the railroad administration put into its freight tariffs for southeastern roads, a num-

ber of carefully made specifications governing containers used in shipping fruits and vegetables from that section, the farmers of Georgia found that they must either violate their state law or not ship their potatoes in the bushel-sized crates prescribed for them by the federal government. The crates were designed to hold an exact bushel of potatoes by measurement. The Georgia law says a bushel of potatoes must weigh fifty-six pounds. The crates, say the farmers, must be made three inches longer if they are to contain a full Georgia bushel of potatoes.

In their effort to define volume in terms of weight, many provisions of state laws are amusing in their oddity. Kansas, for example, says that six and one-half pounds of kerosene shall constitute a gallon. Nebraska fixes twelve pounds of strained honey as a gallon. One state decrees that it takes five pecks to make a bushel of screened lump coal. In another state three-quarters of a peck must be added to an ordinary bushel to produce a legal bushel of charcoal, lime or ashes.

Government experts say that such things as fruits and vegetables never should be retailed by the quart, gallon or peck, but by the pound. They say it is impossible to measure out an exact quantity of such products and the differential grows as the size of the measure decreases.

When it is not practicable to sell such articles to the distributors by weight, they should be sold by the package, and packages should be uniform. The experts assert, too, that complete uniformity cannot be achieved except by national standardization laws.

Congress is as reluctant now as it was in the early days to disrupt local practices. Only twice has it taken action under the weights and measures proviso of the constitution—once to fix a standard for the troy pound, used chiefly in weighing precious metals, and again, a few years ago, to standarize the barrel. Parenthetically, Congress has done much through the Bureau of Standards toward promoting uniform standards. But that work has partaken almost entirely of research and experiment.

CONGRESSIONAL timidity in approaching the standardization of measures is well illustrated by its handling of the barrel. It first standardized apple barrels, fixing dimensions, style, shape and all. But steel barrels were excepted in all but the matter of dimensions. Then it standardized all barrels used in shipping fruits and vegetables, taking care to define dimensions, style and shape, with the proviso "that any barrel of a different form" having the required dimensions shall be a standard barrel. And the cranberry barrel was excepted from all provisions.

Since then Congress has balked at making further use of its authority "to fix a standard of weights and measures." It came to realize the need of more uniformity in the commonly used Climax or grape basket. Millions of them were passed along with their contents to consumers who usually bought a basket of grapes rather than so many pounds or quarts. Fifty or more sizes, styles and shapes, with fractional variations that nobody would ordinarily notice, were in use. Congress would go only so far as to define the kind of Climax or grape basket entering interstate trade. However, the three baskets of exact capacities and shapes which Congress did prescribe for interstate commerce have virtually supplanted all the others, with great saving and benefit to producers and consumers.

When Congress tackled the berry box, which embodied even more shapes and sizes than did the grape basket, it stopped still further short of the limit of its authority. It prescribed only the dimensions, but the standardized boxes have supplanted most of the others.

Congressional wavering is shown further by the fact that it put the enforcement of the barrel law in the hands of the Bureau of Standards and that of the grape basket and berry box laws in the hands of the Department of Agriculture, or Bureau of Markets.

Some states have undertaken to standardize fruit and vegetable containers, but there is as much conflict in state laws as in state customs. Not long ago a Portland, Oregon, commission merchant saw Florida celery quoted about one-half the price per crate he was paying for California celery. He figured out the freight differential and decided the Florida product would cost him less. So he ordered a car, with the result that it cost him nearly twice as much. For the Florida crates were only about one-half the size of the California crates.

Hundreds of millions of containers are used in shipping and marketing fruits and vegetables. Many millions go to the consumer intact. Take peach baskets, for an example. A specialist in the Bureau of Markets is authority for the statement that 25 per cent of those used contain only fourteen quarts. Generally, the large ones are presumed to be of sixteen-quart capacity. In some markets the use of the fourteen-quart basket is customary, and in other markets the volume of contents is shown in writing or printing on a great many of the fourteen-quart baskets. But consumers buy thousands of fourteen-quart baskets of peaches in the belief that they are getting sixteen quarts.

MILLIONS of what presumably are bushel-sized hampers are used in marketing various fruits and vegetables. The same investigator says that the capacity of one-third of these hampers is only seven-eighths of a bushel.

In thousands of cases the difference in size is so slight as to defy detection by the unaided eye. Of course, more culpable practices than that of slight reduction in size are adopted by unscrupulous or ignorant distributors—frauds such as false or raised or over-thick bottoms.

Then there are "honest" measures which in practice work dishonestly. Congress, for instance, has legalized for use in the District of Columbia what is known as the double-ended measuring implement. It is a rounded contraption, being bigger at one end than the other, with a partitioned bottom. One end represents a half peck and the other a peck. Even when the interior dimensions are correct it is impossible to get a full half peck or peck of any dry product into either section of the receptacle.

Congress is now being urged to standardize the hamper basket, the round bushel basket and the common market basket. The number of sizes and styles of each which are now in use is almost limitless.

The common market basket varies inordinately. The general impression is that it is used only as a convenience for taking home an accumulation of parcels. Officials in the Bureau of Markets say that half of the fifty million or more manufactured every year are employed by distributors as containers and are passed along, like grape baskets and berry boxes, to the consumer. Fifty per cent of them, say these officials, represent what amounts to short measurement, fourteen-quart baskets being often accepted as of sixteen quarts.

SPECIALISTS in the Bureau of Markets also favor the fixing of shapes and styles, as well as dimensions. This makes it easier to discover variations and also assures the

(Continued on page 30)

The Present Status of Vitamines*

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IT IS not a simple undertaking to summarize even the more important points in the recent literature on vitamines, because the subject has been developing very fast during the last few years, and parts of it are still much in debate. Not only has information been gained from laboratory research but from observations of the tragic human experience with inadequate war diets.

The material is considered under the headings of the three vitamines now recognized—fat-soluble A, present in butter fat, cod-liver oil, green leaves, etc., the absence of which results often in the eye disease xerophthalmia; water-soluble B, fairly widely distributed in plants, and necessary to prevent polyneuritis or beri-beri; and water-soluble C, the antiscorbutic vitamine. All are necessary for the best growth.

Fat-Soluble A

Dr. H. Gideon Wells[2] of the Department of Pathology of the University of Chicago, who served in Roumania under the Red Cross, tells a dramatic story showing the need of this vitamine for children. The scanty diet in Roumania, when he arrived, consisted of little more than a limited amount of cornmeal and quantities of a very thin bran-vegetable soup. There was no milk nor butter, for the Austrians had driven off the cows. Many of the children had eye disease, sometimes so severe as to cause blindness. There also was much of the distressing swollen condition known as war-edema, the latter probably due to the low calories and specially the low protein of the diet. Dr. Wells, at the height of his difficulties in getting food of any kind, learned of a vessel which had put into Archangel with cod-liver oil as its entire cargo. Through the efforts of the Red Cross, all of it was sent down, and it saved the lives of many of the children. After their long fat starvation, they took readily what might have been refused under happier circumstances.

Not only xerophthalmia but rickets may be connected with lack of fat-soluble vitamine. Work by Mchanby (1) on puppies seems to point in this direction, and possibly that of Hess and Unger (2) on the value of cod-liver oil in curing and preventing rickets in negro infants.

The need for fat-soluble A is not limited to children or young animals in general. Drummond (3), in London, has shown that as young rats approach maturity their requirement becomes markedly less. They can even live without it in apparently good health for considerable time, but sooner or later they lose weight and often have eye disease. They also show a distinct decrease in resistance to various infections, many deaths from infectious disease occurring. The older the young rats are the longer they can stand the inadequate diet before their decline. Dr. McCollum in his lectures has reported what he believes to be a similar pathological eye effect in adult human beings in certain northern lumber camps where the only fat is cured bacon and where the diet must be almost completely lacking in *A*. A condition known as "night-blindness" is prevalent—a defect of eyesight not noticed by the non-reading laborer till the dim light of night. "There is therefore every reason," says Drummond, "that great care should be taken to ensure that dietaries of adults contain an adequate supply of foodstuffs in which the fat-soluble A is present."

The fat-soluble vitamine occurs in more foods than was at first thought, but in variable quantities. Butter fat is still regarded as the most important source, but the quantity (4) therein depends upon the quantity of *A* in the feed of the cow and upon the manipulation of the butter itself. (See below in connecton with stability.) Whale oil is another fairly rich source, though not so rich as butter. Drummond (5), with carefully standardized methods of feeding young rats and noting the change of weight, if any, week by week, found that he obtained about the same satisfactory growth when the fat-soluble A came wholly from 8 per cent butter fat or 20 per cent whale oil. McCollum (6) has found even smaller amounts of butter fat entirely satisfactory—as little as 3 per cent. Fish oils in general, and fat fish may serve as valuable sources. Oleo oil, as shown by Osborne and Mendel several years ago, contains a fair amount of it, and so do oleomargarines made from oleo oil, but not the nut margarines made wholly from vegetable oils (8). However, as Steenbock (4) says, "Oleomargarines . . . are not to be considered in the same class as good butter in providing the organism with the fat-soluble vitamine." Pig's liver oil and liver tissue, kidney tissue, probably glandular organs in general (9) give fair supplies—that is, that portion of the animal of which we eat little is far superior to the skeleton muscle of which we eat much.

Of the vegetable sources we know even better than formerly the value of spinach. Osborne and Mendel (10) fed rats dried spinach to the extent of 5 per cent of the diet as their only source of fat-soluble vitamine for eighty-seven and eighty-three days; then substituted the spinach by yeast, which is free from the fat-soluble vitamine, containing only the water-soluble. The rats continued to thrive for ninety-three and ninety-seven days more, that is, they had stored up enough of the fat-soluble vitamine from the spinach to last through the long period of deprivation. Cabbage is not so satisfactory. Carrots (11), although not leaves, have some fat-soluble A; peas (12) a small amount. So, too, possibly, do bananas (13). Yellow corn (14) may contain sufficient amount to allow normal growth and reproduction in the rat, but white corn is valueless as a source.

A very interesting generalization[3] has been made by Steenbock (14) about the foods which contain this vitamine: they all contain yellow coloring matter. Butter, egg yolks, cod-liver oil are obvious examples. Oleo oil, the part of the beef fat which contains the vitamine, is yellow, the solid beef fat which lacks it is colorless. Of the commercial oleo oils which he has tested, those most highly pigmented are richest in the fat-soluble vitamine. Colored roots such as carrots and sweet potatoes, have it, but sugar beets, mangels, dasheens and Irish potatoes have little or none. Spinach and grass, of course, have yellow associated with their chlorophyl. The carotin isolated by Steenbock did not serve as a substitute for the vitamine, but carotine is a very labile substance

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1. The authors wish to thank Dr. Lafayette B. Mendel and Dr. E. V. McCollum for reading this paper and making important suggestions.

2. Personal communications.

3. See, however, an article by Palmer, which appeared after this paper had gone to press, in Science, 50, 502, (Nov. 28), 1919, and which enumerates various foods with yellow color and without A, and with A without yellow color.

and may have changed chemically in the process of removal. "It appears reasonably safe, at least as a working hypothesis, to assume that the fat-soluble vitamine is a yellow plant pigment or a closely related compound."

The stability of fat-soluble A is not nearly so great as has been thought. The earlier conclusion that it is stable to heat is due more probably to the fact that such large quantities of the vitamine-containing food were fed that a destruction of part of it would not be noted. Steenbock, Boutwell and Kent (4) have found that after butter fat had been heated for four hours at 100° its growth-promoting properties had largely disappeared, and after one hour at 100° they had distinctly lessened. Drummond, interested particularly in the use of hydrogenated fats as butter and lard substitutes during the fat shortage in England, has investigated the question both for whale oil and butter. The hydrogenation of the whale oil at 250° for four hours completely destroyed the *A*. Even heating at 100° for an hour had the same effect, or keeping it for eighteen days at 37° spread out exposed to air. The heat was the cause of this loss of efficiency, for shaking with oxygen at room temperature made no change. Steenbock mentions a sample of butter which showed no demonstrable amount of *A* after it had been kept three weeks unsalted in a poorly iced refrigerator. The probability of some destruction during ordinary cooking processes is thus of interest.

With cabbages (15), too, high temperatures or drying may reduce the efficiency, an hour's heating at 100°-120° having no effect on *A*, but two hours at 130° destroying it completely.

The fat-soluble vitamine therefore seems to be of even greater importance in the diet of young and old than was formerly realized, and while it is more widely distributed, it is less stable than the first investigations demonstrated, and may be even destroyed in part at temperatures used in cooking.

Water-Soluble B

For studying the water-soluble vitamine, observations have been continued on the growth of rats and on the onset of polyneuritis in pigeons and chickens. While it is not definitely proved that these two methods deal with one and the same substance, the assumption that such is the case is usually made. A new and most promising method of research has just been developed by Williams (16) in the laboratory of Physiological Chemistry of the University of Chicago. Yeast (16, 17), unlike the higher plants, cannot grow without this vitamine. Therefore if drops of different solutions each containing a single yeast cell are observed microscopically at intervals of a few hours, the growth of the yeast and the number of cells into which it has multiplied will show not only whether the solutions contain the vitamine, but the relative quantities present. This method is of course much simpler and quicker than the usual feeding experiment and will probably result in a rapid increase in our knowledge of this vitamine.

Water-soluble B occurs more widely in plant than in animal foods. Milk is by no means rich in it. Osborne and Mendel (18) found it necessary to give their rats at least 16 cc. per day for normal growth. They discuss but do not explain to their satisfaction the much quoted[4] result of Hopkins, who secured remarkable growth on adding as little as 2 cc. of milk to a diet on which his rats were failing. They warn against a diet of white bread and only a little milk, or against feeding infants a top milk, water, sugar mixture. Muscle tissue also is low in this vitamine, but various other animal tissues—heart, kidney, brain and liver—are satisfactory sources of supply—a distribution similar to that of *A* (9), though somewhat wider.

An especially satisfactory statement of the occurrence of this vitamine in plants, as so far known, is given by Osborne and Mendel (19) in the *Journal of Biological Chemistry* for this past August. They list a wide variety of plant foods, including, among others, seeds or cereals and a number of legumes, spinach, cabbage, potatoes, and carrots; and they add to the list, from their own recent experiments, the usual edible portion of the onion, turnip, beet (leaves, stem and root), and tomato. A goodly number of our common vegetables have thus been tested for *B*, and so far, without exception, every one has been found to contain it—a much wider distribution than that of *A*. The part of the cereal that is rich in it is not the bran, as usually supposed, so much as the germ, which is often removed with the bran, *e. g.*, in rice polishings. Commercial wheat bran contains more or less vitamine, according to the amount of the germ associated with it. Of one sample tested by Chick and Hume (20) five and a half times as much had to be used to cure polyneuritis pigeons as was necessary when the germ was used. Our commercial bran is especially thoroughly "skinned" when it comes from large, well-equipped modern flour mills (21), and therefore is of little value to correct the deficiency of white flour and bread. Even the yeast or the milk used in the white bread does not prevent polyneuritis in pigeons (22), though the yeast delays the period of its onset. On the other hand, bread made from real graham flour is adequate. Of course, these facts have important bearing upon the kind of flour most desirable from the standpoint of national nutrition. Voegtlin and Lake, in a later paper (23), say, "We believe that a product which does not contain any bran but does include the germ would not possess these objectionable features (of causing intestinal disturbances), would at the same time be more nutritious and would reduce greatly the possibility of vitamine deficiency in the modern mixed diet."

Yeast (10) is distinctly the richest known source of the water-soluble vitamine, being four times as efficient as dried spinach, which ranks next among a group studied quantitatively. Only half as rich as spinach are whole wheat, soy beans, dried eggs, milk solids. Cabbage, too, is not so satisfactory as spinach. Wheat germ is a valuble source, and so are navy beans and peas. Immature alfalfa clover and timothy show decided advantage over the mature (19). This variation with age may apply to plant foods in general and may mean a real nutritive superiority for young vegetables.

Like fat-soluble A, *B* is not so stable toward heat as we formerly supposed. McCollum's beans and peas (12), which, although heated for one and a quarter hours in an autoclave, still supplied all the *B* that the rat needed, were fed in large quantities, often as much as 25 per cent of the diet. When the food supplying *B* is fed in the smallest amount which will produce growth at all (24), it is found that heating about 100° does cause deterioration, and that the heated food has to be supplied in larger quantities than the raw food. For example, while wheat germ (25) heated 2 hours at 100° loses little or none of its potency, heated 40 minutes at 113° it loses one-half, and heated 2 hours at 118°-124° it may lose up to nine-tenths. These temperatures, of course, point to the safety of the water-soluble vitamine in our ordi-

4. Sherman: Food Products, 1914, p. 79.

nary cooking processes, but the danger of its partial or complete destruction in commercial canning or other high-pressure cooking. Tinned meat, Chick and Hume report, is devoid of this vitamine, a fact shown not only by their laboratory experiments, but by the repeated development of beriberi in the British army in the Dardanelles and Mesopotamia, where the diet for a time consisted only of white bread, tinned meat and jam.

Alkali Treatment

The stability of *B* toward alkali seems to be uncertain, though here, too, according to Chick and Fume, the difficulties may be due to feeding such large quantities that a destruction of half or even more during the alkali treatment would not have noticeable effect on the animals. Sullivan and Voegtlin (26) of the United States Public Health Service, who observed several years ago that chickens developed polyneuritis promptly on corn bread made with soda but not on corn bread made with salt, now report polyneuritis in cats and dogs fed meat treated with sodium carbonate till distinctly alkaline and then heated at 120° for three hours; meat heated without the alkali was still a fairly satisfactory food. Rats, however, that were fed the alkali meat liver for at least 110 days—a fact quoted by Osborne and Wakeman (27) to show, with experiments of their own, that the vitamine is more resistant to alkali than generally supposed. Daniels and McClurg (28) feeding generous quantities of navy beans, soy beans and cabbage, found the diets entirely satisfactory even when cooked for an hour and a half with 5 per cent sodium bicarbonate. McCollum and Simmonds (29) find the *B* in wheat germ destroyed by boiling with 0.28 per cent sodium hydroxide for an hour, but Osborne and Wakeman (27) find it undiminished in yeast digested with tenth normal sodium hydroxide (slightly stronger than McCollum's) for two and a half hours, and then heated for two hours. It may be that previous extraction with ether or other removal of the fat lessens the stability of *B* (16).

What happens in the body as a result of lack of the water-soluble B in the diet? McCarrison (30), working in India[5] has made striking advances in answering this question. He has observed changes during life and loss in weight of organs after death in a large group of pigeons made polyneuritic by a diet of polished rice, and later a group fed polished rice, butter fat to supply *A*, and onions for *C*[6]. There was little difference between the group undergoing *B* starvation and that with general vitamine starvation. The body temperature of the pigeons gradually fell from a normal average of 107° F. to 98° or 99° F., showing a marked slowing up of metabolic processes. Digestive processes were greatly impaired; the starch was largely excreted unchanged. The different organs of the body lost weight strikingly, all except the adrenals, which gained — thymus most, then, in order, testicles, spleen, ovary, pancreas, heart, liver, kidneys, stomach, thyroid, brain. The testicles lost 93 per cent and the ovaries 69 per cent of the original weight. "Perhaps one of the most remarkable results of a dietary deficient in so-called anti-neuritic vitamine is the constant and very pronounced atrophy of the testicles in males and the similar but less pronounced atrophy of the ovary in females." Other investigators have noted similar results of vitamine starvation. Drummond found that when male rats, after as short a time as fourteen days on a diet adequate except for *B*, were mated with females on an adequate diet, no pregnancies resulted.

Such degrees of atrophy in the human subject would result in sterility in males and in amenorrhoea and sterility in females. Human observations are not lacking. McCarrison quotes Vedder as saying that beri-beric women cease to menstruate. "War amenorrhoea" (abnormal cessation of menstruation) is referred to in many recent German periodicals with alarm, attributing it in part at least to defective nutrition. In the Charité-Frauneklinik in Berlin it has been seven times more frequent than before the war.[7] In Belgium, too, many cases have been observed (31). The experience of Benedict's young men is also striking (32). These difficulties may, of course, be due to general food lack rather than to the specific deficiency in *B*.

Miscellaneous infections were very frequent among McCarrison's pigeons. The whole body was liable to be overcome by a rank growth of bacteria. There may be some similarity between this observation and the great increase in tuberculosis abroad during the war.

The whole morbid process of McCarrison believes to be due to muscular starvation of all tissue cells. "Vitamines are nuclear nourishers."

Water-Soluble C

The third vitamine now recognized is the antiscorbutic. The earlier conclusion (3) that scurvy is not a deficiency disease, but is due to constipation, has been abandoned. Its adoption probably arose from having a non-controlled milk intake in the diet of the experimental animals and therefore a slight and variable amount of the vitamine.

With this vitamine even more than with the others, human experience as well as laboratory experiments must be considered—both infantile scurvy and adult scurvy. Mild cases of the latter may merely manifest themselves in languor and depression, and severe cases in looseness and final falling out of the teeth, soreness and hemorrhages of the gums, swelling of the joints, great weakness, and finally death. Degenerative tooth changes are particularly characteristic of scurvy (34). They have been described at length in the guinea pig and are said to be identical in the human subject.

The laboratory animal most used is the guinea pig, for rats, while they thrive better with the antiscorbutic than without it, (35) do not have scurvy. The usual experimental method, carefully worked out, is to note the smallest quantity of experimental food which will prevent the onset of scurvy in the guinea pig when added to a basal "scorbutic diet" such as oats, hay, and autoclaved milk.

Among the chief workers on the antiscorbutic vitamine are Hess in New York, Givens in New Haven and Rochester, and the group, largely women, at the Lister Institute of Preventive Medicine, London—Harriette Chick, E. Margaret Hume, and others. The results of the latter were made the basis of the recommendations of the Food (War) Committee of the Royal Society on the prevention of scurvy in the army and navy (36). Three recent editorials (37) in the *Journal of the American Medical Association* summarizes much of their work as well as that of others.

"The vitamine is present in living vegetable and animal tissues, in largest amounts in fresh fruits and green vegetables, to a less extent in root vegetables and tubers. It is present in small amount in fresh meat and milk, and has not been detected in yeast, fats, cereals, pulses"

5. A fairly full abstract of the first of these papers is given in British Medical Journal 1, 177, (Feb.), 1919, and a briefer reference to it by Le Mer in Jour. Amer. Med. Assoc. 73, 1381, (Nov. 1), 1919.

6. Observe apparent contradiction here with Osborne and Mendel's work with rats, proving B in onions. McCarrison's pigeons became polyneuritic even more promptly in the butter-fat-onion group than on polished rice alone.

7. (British Medical Journal, Dec. 1, 1917, p. 734.)

(38). It is sensitive to high temperature and destroyed "when the living tissue is disorganized by drying and other methods of preservation." Orange juice has been generally recognized as one of the best antiscorbutics; grapes are only about one-tenth as satisfactory. Orange peel extract is also of value. Lime juice is poor. The "lime juice" of the eighteenth and early nineteenth century which was responsible for the disappearance of scurvy from the British navy, was really lemon juice from the Mediterranean countries. In 1875 certain vessels on polar exploration changed from the old "lime juice" to the true West Indian lime, and scurvy broke out again with great severity. The Lister Institute work has shown that fresh lemon juice has about four times the value of lime juice as an antiscorbutic and that preserved lime juice is almost valueless.

Of the vegetables (39), often more readily available than the fruit and cheaper, raw cabbage is even better than orange juice, and the raw juices of swede (a kind of turnip), beetroot and carrots are of service. Cooking (40), however, diminishes or entirely destroys their efficiency except when the vegetables (carrots) are young (Hess). Cababge (15) cooked for one hour at 60° or twenty minutes at 90° to 100° lost about 70 per cent of its antiscorbutic value and for one hour at 90° more than 90 per cent. Long cooked or canned vegetables are thus of no value as antiscorbutics, a fact borne out by human experience for many years. Canned tomatoes (40) seem to be an exception, possibly because of their acid and original richness in the substance. They have been successfully used as a substitute for the more expensive orange juice to prevent scurvy in infants receiving pasteurized milk (41).

Drying, too, lessens the value (42) and still more, storage after drying. Dried vegetables and herbs have been tried in scurvy in the Army and Navy with no help. Dried tomatoes, however, Givens (43) found, still retain a significant amount of the original high antiscorbutic potency. Drying generally does least harm when done quickly at a low temperature (under diminished pressure) and when the vegetables dried are young. Dried beans, themselves valueless, develop their vitamine on sprouting (44). The Food (War) Committee of the Royal Society recommends (36) that when other antiscorbutics are not available the beans be sprouted and the sprouts used. Their therapeutic value was strikingly shown when King's College Hospital, London, with a number of mild cases of scurvy in soldiers from Serbia, divided its patients into two groups, treating thirty in one ward with 4 ounces of fresh lemon juice daily, and twenty-seven in another with 4 ounces of dried haricot beans freshly germinated. Of the patients on the lemon juice 53.4 per cent were cured within four weeks and of those on the germinated beans 70.4 per cent (45).

Potatoes contain the vitamine if not cooked too long, but, as the only antiscorbutic, the ration must be as much as fourteen ounces per man per day (36). In Glasgow (46), recently, a poor law hospital which had apparently been depending largely on potatoes and had been near the danger line with a normal of three cases of scurvy a year, developed fifty cases when the lack of potatoes in the fall and winter of 1916-17 caused the substitution of the potatoes by rice and bread. In this country, too, Hess (47) speaks of the development of scurvy in numerous institutions in the spring of 1916 after an exceptionally poor potato crop the previous year. In one there were more than twenty deaths, in another more than two hundred diagnosed cases and probably many latent cases which escaped observation.

Milk (48) is of only moderate value as an antiscorbutic and loses most of the value when pasteurized or boiled. Commercial condensed milk (49) is valueless and so, too, is dried milk unless the drying is done very quickly, *e.g.*, for a few seconds at 116° (Hess and Unger) (50). Numerous observations have been made of infantile scurvy developing from use of pasteurized milk and its check by the addition of orange juice. In this connection should be mentioned a very valuable summary, though without the work of the last two years—Morse's "A Résumé of the Literature of Infantile Scurvy During the Past Five Years," in the *Boston Medical and Surgical Journal* (51). An editorial in the *Journal of the American Medical Association* (52) cites numerous recent distressing cases of infantile scurvy abroad, for instance, in Prague in 1917-18 when the much desired "raw" milk was often of doubtful "rawness," oranges had disappeared from the markets since early in the war, and other fruits and even most green vegetables were difficult to obtain and usually very expensive.

Fresh meat has so little antiscorbutic value that the Royal Society (36) states that as much as two to four pounds daily are necessary if it is to be used as the chief preventive agent, and tinned meat is completely valueless. Dutcher, Pierson and Biester (53) find practically none even in raw beef. Their laboratory experiments do not confirm Stefánson's remarkable report (54) of his polar experiences. His habit, and that of his party in the north, was to live almost wholly on seal meat and bear meat, using not only the musele tissue, but liver and various other organs. Often they consumed raw frozen liver. They had no cases of scurvy on this diet. However, three men, who were separated at times from the main party and depended largely on some cached foods which they had found—flour, salt pork, butter, honey, sugar, pilot bread, preserved fruit, pemmican, meat extract, dried fruit, rice, beans, and peas—developed serious scurvy. They were promptly cured when fed meat, largely raw.

One more human scurvy experience (55) illustrates a number of the points so far stated. A number of camps of the South African Native Labor Corps were established in France during the war. The rations consisted of 1 pound of frozen or preserved meat, 8 ounces fresh vegetables and definite quantities of mealy meal (corn) or rice, bread, coffee, sugar, salt, margarine and tobacco. In country depots where they could pick extra fruit (apples) no scurvy occurred, but in a camp when this was impossible 40 per cent of the natives at one time showed symptoms of scurvy. The half pound of fresh vegetables probably allowed no margin for the reduction of the antiscorbutic, and yet all foods had been cooked for at least three hours. The chief part of the cure was to give lemon juice, increase the supply of vegetables and limit their cooking to forty-five minutes. In a camp where the scurvy was most severe and lasted longest it was discovered that the instruction to shorten the cooking period had been disobeyed. The condition was soon improved when the cooking was reduced to forty minutes.

In conclusion, it is plain that remarkable as are the advances in the subject, we still have far to go for anything approaching complete knowledge. We need more quantitative information as to the distribution of the vitamines in foods and their resistance to all sorts of manipulations—cooking, storing, aging. We lack knowledge of the quantities

advisable for human beings of different ages. Finally, and most fundamentally, we yet await the isolation of the substances themselves in purity and the establishment of their chemical composition.

It is very difficult to say what is the importance to the average individual of giving thought to these three vitamines in choosing the diet. Most of us probably use milk or leaf vegetables (McCollum's "protection foods") to get an adequate supply of *A*, enough vegetables of all kinds and whole cereals to get *B*, and enough uncooked or little cooked foods for *C*. But the occasional moderately well-to-do individual with dietary idiosyncrasies, many persons on very limited incomes, and many in institutions must be close to the danger line. Probably *C* with its marked unstability to heating or drying is the most often low in quantity, and *A* with its limited distribution second. It is more than probable, too, that all sorts of common languors and inefficiencies, and susceptibilities to many miscellaneous infections, are connected with shortage in vitamines.

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The Words of the Wise

How can a man come to know himself? Never by thinking, but by doing. Try to do your duty, and you will know at once what you are worth.

Men get out of countenance with themselves and others because they treat the means as the end, and so, from sheer doing, do nothing, or perhaps, just what they would have avoided.

Character calls forth character.

I keep silence about many things, for I do not want to put people out of countenance, and I am well content if they are pleased with things that annoy me.

Piety is not an end, but a means: a means of attaining the highest culture by the purest tranquility of soul.

Who so is content with pure experience and acts upon it has enough of the truth. The growing child is wise in this sense.

The really foolish thing in men who are otherwise intelligent is that they fail to understand what another person says, when he does not exactly hit upon the right way of saying it.

What is it to be a gentleman? It is to be honest, to be gentle, to be generous, to be brave, to be wise, and, possessing all these qualities, to exercise them in the most graceful outward manner.—*Thackeray.*

CHEMISTS MEET IN CHICAGO

The Fall Meeting of the American Chemical Society will be held in Chicago, September 7 to 10, 1920, inclusive.

Interesting Truths About Yeast

By Dr. RALPH EVERETT LEE

THE vegetable kingdom or the world of plants includes the largest and the smallest living things on the earth. At the one end we have the wonderful redwood trees of California towering two hundred and eighty feet above the ground, and at the other minute plants that can only be seen individually with the most powerful microscopes. Among the latter yeast stands forth as one of the most extraordinary as well as one of the most useful of these small plants.

If you dissolve a small piece of yeast in a glass of water and examine a drop of it with a microscope you will see thousands of small semi-transparent egg-shaped bodies. These are the yeast plants and a cake consists merely of millions and millions of these little organisms pressed together. So small are these plants that it requires four thousand of them laid side by side to make an inch.

To get a clearer conception of a cake of yeast, imagine, if you will, a pile of eggs, eight hundred feet square and two hundred feet high and you have an almost perfect mental picture of a yeast cake enlarged to the size of a city block. In fact, an ordinary three-cent yeast cake contains twenty-two times as many separate individual yeast plants as there are people on the surface of the earth.

In this connection it is well to bear in mind that, after all, size is only relative. The astronomer talks of millions of miles. He tells us of planets and suns thousands of times larger than our earth. His unit of measurement is the light year. Light travels 186,000 miles per second, and the total distance light will travel in 365 days is a light year. The star Sirius, for example, is seventeen light years from the earth.

The units of measurement of the average man are the mile, the yard, the foot and the inch. Now, one twenty-fifth of an inch is a millimeter and one-thousandth of a millimeter is known as a micron, and this is the unit of measurement of the bacteriologist and the yeast manufacturer — one twenty-fifth-thousandth of an inch.

To the physicist and chemist, however, who deal with colloids, molecules, atoms, electrons and perhaps sub-electrons, the yeast plant is an enormous body. For just as the bacteriologist deals with microns, one twenty-five-thousandth of an inch, the unit measurement used by chemists is one-thousandth of a micron or the micro-micron, which is one-twenty-five-millionth of an inch, and even this minute unit is almost too large to deal with the ultimate conceptions of matter.

Although the yeast plant is so exceedingly small it is still large enough to contain, like all plants, a dozen or more elements such as carbon, phosphorous, potassium, hydrogen, oxygen and nitrogen, and not only presents a most complicated organic structure capable of exhibiting the vital phenomena of food assimilation, growth and reproduction, but also possesses those remarkable properties that make it so valuable to the housewife and baker and doctor.

Since yeast is a plant, the same as a cabbage, an onion, or, let us say, more like a mushroom, it follows that the yeast manufacturer is really a scientific farmer, scientific because he controls all the conditions that influence his crop, and his business is to grow yeast under such ideal conditions that each one of his millions of plants will be in the prize winning class.

Do not think that yeast is dead, inert material, like putty or macaroni. Every plant is alive, the cake is full of energy, which is set free the moment it comes in contact with the sugar in the dough. Bring it in contact with food and it is ready to grow. Eat it and it will not only supply food to build up the muscular and nervous tissue, but will also increase the resistance of the body to disease.

A cake of yeast is slowly breathing all the time like all living plants, or like human beings, taking in oxygen and giving out carbon dioxide. If allowed to get warm it will breathe too fast and because no food is available in the cake, it will use up all its energy and get weak, so it should be kept cold till it is used.

The growing of yeast is not a simple matter. The soil or media on which yeast is grown is made chiefly from corn and malt. The corn is ground and cooked and malt added. This exerts a most remarkable action upon the cooked starch. If the cooked corn is tasted before the addition of the malt it resembles any ordinary unsweetened oatmeal, but an hour or two after it will be found to be very sweet and chemical analysis shows us that all the tasteless starch has been converted into sugar. This wonderful change is brought about by the action of a substance in the barley malt known as diastase. It is a wise provision of nature that the food stuff stored up in the grain for the growing embryo is in the form of insoluble starch.

Under natural conditions the grain of corn, wheat or barley drops to the ground in the fall of the year and lays there till the following spring exposed to the rain, snow and frost. If the seed contained sugar as foodstuff for the germ it would be washed out and lost long before the germ started to grow in the spring. But this foodstuff, the starch, must be rendered soluble before it can be utilized by the growing plant, before it can flow up through the capillaries of the little sprouts, till the leaves, which can obtain carbon from the air, make their appearance.

So with the warmth and moisture of the spring there is developed in each grain this remarkable substance known as diastase, which has the power of converting starch into sugar and so rendering the foodstuff available for the growing plant.

But Nature, always prodigal and generous in matters pertaining to the preservation of the race, makes about fifteen times as much diastase as is necessary to convert the starch of the grain into sugar, and it is this excess that is utilized. It is the duty of the maltster to imitate closely the weather conditions of spring the year round.

The barley is moistened and piled up till little sprouts make their appearance. But a more profound and important change has taken place within the kernel, namely, the appearance of the diastase. In about a week the growth is stopped by drying the grain. The little rootlets become brittle, are shaken off and the grain, now known as malt, is ready for the yeast maker. All grains may be malted and we may have corn malt, wheat malt or rice malt, but for the yeast maker barley malt has been found to be the best.

After the addition of the malt to the cooked corn and after all the starch has been changed to sugar,

this mixture, which is called a mash, is now put through a purifying process.

Metchnikof, late chief of the great Pasteur Institute, made the world stop for a moment in its busy rush a few years ago by intimating that old age or senility was one of the preventable diseases. Universally epidemic and rather chronic in its course, 'tis true, but nevertheless preventable.

It was Metchnikof's idea that many of the symptoms and causes of senility are due to the absorption of toxins from the intestines, toxines or poisons which are produced by the presence of foreign putrefactive bacteria.

Metchnikof told us that if we would drink plenty of sour milk, especially that soured by the Bacillus Bulgarious, we would kill off all the age-producing bacteria and replace them with the more beneficent flora.

Long before the Bacillus Bulgarious was used to purify the human system, the yeast maker was souring his mash for the same purpose. So our mash is innoculated with a pure culture of a lactic acid producing organism and allowed to sour for eighteen hours, then sterilized and filtered. It is this liquid that contains the ideal yeast food and it is in this liquid that the yeast is grown. All these operations are merely preparing the soil for the seed yeast.

This rich and sterile grain extract is now carried to the huge copper fermenters. These tubs are twelve feet in diameter and twenty feet high and hold nearly twenty thousand gallons each.

In one of our plants, of which there are twelve, there are forty of these tubs with a capacity of one hundred thousand pounds of yeast every twenty-four hours.

Each of these tubs of grain extract are seeded with one hundred pounds of seed yeast every day and the following day the yeast has grown and multiplied over twenty times, so that each tub will contain more than two thousand pounds of yeast floating about in its liquid.

Yeast multiplies and grows by a process known as budding. A single yeast plant floating in grain extract, after twenty minutes to half an hour shows a slight projection on one side. This projection or bud soon enlarges and grows till it is nearly as large as the original plant. Then, too, it puts out a bud and before this is full grown the first plant puts out another bud. And this process continues until twenty or thirty buds are formed, attached one to another in a sort of branched chain. Then the ripening out process occurs when all these separate one from another and float about singly. It is the aim of the yeast maker to press and sell only mature plants without buds, for like children, the young plants will not stand shipment and old cells lack strength.

The method of preparing yeast from a pure culture and growing tons of yeast from a single yeast plant is very interesting.

First a minute quantity of yeast, consisting of only a few million plants, is placed in a large bottle of clear sterile grain extract and thoroughly shaken to separate the plants. Then small drops of the liquid are placed on a glass microscope slide, carefully covered, and each drop examined attentively with a microscope. A drop is sought containing one single yeast plant and nothing else. When one is found it is marked and the slide put in the incubator till next morning when the drop will be seen to contain twenty to thirty plants. The drop and the yeast it contains is then transferred to a small flask of grain extract by means of sterile platinum wire. This is incubated for twenty-four hours, when it will contain yeast plainly visible to the naked eye. This yeast is then poured into a quart bottle and after twenty-four hours growth is transferred to a five-gallon bottle, and so on, the five gallon to two hundred gallon, the two hundred gallon to two thousand, the two thousand to twenty thousand and the yeast from this will be more than sufficient to stock or seed tubs yielding over 100,000 pounds, equivalent to nearly four million cakes, and when it is remembered that each cake contains over forty billion individual yeast plants and all grew in a few days from one single microscopic cell, it will be seen that the rate of growth is far beyond our comprehension.

If the yeast plants made in a single day were placed side by side, small as they are, the chain so formed would span the distance from the earth to the sun, about 95,000,000 miles, with seven strands. It has been explained how this amount may be grown from a single microscopic plant in less than ten days, which means that the aggregate linear growth is at the rate of 50,000 miles per minute!

Now this is not merely a seicntific story, but an account of what is going on every day in our yeast factories all over the country.

Now let us return to our commercial problem. We left our yeast fully grown, floating about in a huge copper fermenter. It only remains to separate it from the liquid and press it into cakes.

Most of the liquid is removed by centrifugal machines similar to the cream separators of the dairy, only in this case the cream contains the yeast. It is further dried in filter presses and finally pressed into 80-pound boxes, under eight hundred pounds per square inch. In this form it is shipped to our distributing agencies, where it is cut and wrapped by machine and sent out over the country.

Now that we have seen how yeast is made or grown, let us answer briefly the questions, What is yeast for? Why is it used? What does it do in the bread? How is it that with the advance of science in every field of endeavor, we still leaven our bread with yeast?

Yeast and fermentation have been known from the earliest times. Our word yeast is related to the old Sanscrit root "Yas," meaning to seethe or boil, descriptive of its action in sugar solutions.

As the Indo-European tribes spread westward over Europe this root in various forms with additions and changes, was left in many languages.

For example, in the Greek the "Y" becomes "Z" and we have "Zestos," or zest, meaning fervent, and in passing, note that fervent comes from the Latin "fervere," to boil, again descriptive of fermentation.

The word came over the English channel as "gist," the "G" was probably pronounced soft and easily became "Y," as in the case of yesterday, which in Dutch is gistertag and and in German gestern.

The preparation and use of fermented juices and beers was undoubtedly known several thousand years before the Christian era. The Egyptians and Romans all had fermented drinks and in Genesis we read that "Noah began to be a husbandman and he planted a vineyard and he drank of wine." The sequel of the story shows that this was fermented.

That the use of leaven to make bread dates from the very earliest times is shown in Genesis, when Lot "made them a feast and did bake unleaven bread." Lot's wife evidently had to apologize and explain why she ran out of yeast.

Pliny, the Elder, writing in the time of Christ, said that the women of Paul made a kind of beer from

(Continued on page 34)

Rice Is Still America's Cheapest Food Despite Advance in Price

A Comparison of Rice With Other Food, Showing Relative Values in Both Price and Nourishment, Is Given in the Following Article by

F. B. WISE, Secretary Rice Millers' Association

HUMAN food is anything which when taken internally and assimilated by the organs, nourishes the body and goes to support life. There are many classes, sub-classes and kinds of foods, depending upon their chemical composition, and the uses made of them by the body. All foods may be roughly divided into two divisions, "inorganic" (salt) and "organic" (meat or vegetables); and the organic foods are often classified as "nitrogenous" (eggs), and "non-nitrogenous or carbohydrate" (rice). The value of food depends upon its chemical composition, its digestibility and palatibility. A staple article of diet should not only be high in food value to provide heat and muscular energy for the body, but should also be easily digestible, palatable and capable of being cooked in many different ways, and in various combinations with other foodstuffs to produce that variety so essential to the appetite. In addition, such a staple should be reasonable in price so that it may be purchased by the great mass of consumers in sufficient quantities to meet their needs.

Rice as a food belongs to the non-nitrogenous or carbohydrate food because the most important food constituent is starch. It contains, however, an appreciable amount of protein and lesser amounts of fats and the mineral salts.

Rice is easily cooked in a large number of ways and in an infinite number of combinations with other food materials. As stated by the domestic science department of Cornell University, it combines even more readily than potatoes with milk, cheese, meats, fowls, fish, cold vegetables and preserved fruits. Its left-overs are easily made into palatable dishes which provide bulk and food value, and at the same time eliminates waste. Some of the common methods of serving rice are: As rice water to invalids, breakfast cereal, dinner vegetable, soup, salad, pudding, rice cakes, boiled rice with gravy, rice croquettes, tuna fish with rice, or as a side dish with practically any kind of meat, fowl or fish. As a breakfast cereal, boiled rice, puffed rice, rice flakes, or cream of rice are served with cream and sugar.

Considered chemically, and as a food, there is practically no difference in the "head" or whole-grain grade and the "broken" rice as purchased. The broken rice is secured when the whole grains are broken in the milling process, and in color and texture is equally as good as the head rice. When boiled, the head rice generally has a better appearance, because the grains are likely to be more fluffy and do not become as "pasty" as the broken rice. When used in making cereal soups, croquettes, puddings or desserts, the broken rice is equally as good in every way as the more expensive head rice.

Table I. A Comparison of the Chemical Composition of Rice with That of Other Starchy Foods Used in a Regular Diet. All Articles as Purchased

Food Material	Water Pct.	Protein Pct.	Fat Pct.	Carbohydrates Pct.	Ash Pct.	Value per lb. Calories
Polished rice	12.3	8.0	.3	79.0	.4	1630
White potatoes	78.3	2.2	.1	18.4	1.0	385
Sweet potatoes	69.0	1.8	.7	27.4	1.1	570
Wheat flour	12.8	10.8	1.1	74.8	.5	1640
Macaroni	10.3	13.4	.9	74.1	1.3	1665
Oatmeal	7.3	16.1	7.2	67.5	1.9	1860
Corn meal	11.6	8.4	4.7	74.0	1.3	1730
Green corn	75.4	3.1	1.1	19.7	.7	470
Hominy	11.8	8.3	.6	79.0	.3	1650

Table 2. Food Value of Cooked Rice Compared with That of Other Commonly Used Foods, Prepared for Consumption

Foodstuffs—	Ordinary Helping — Weight Grams.	Ordinary Helping — Food value Calories	Food value per 100 gms. Calories
Rice (boiled)	100	112	112
Hominy (boiled)	100	84	84
Cornbread (Johnnycake)	39	104	266
Green corn (boiled ears)	100	100	100
Bread (baker's white, wheat)	30	80	268
Bread (whole wheat)	42	106	251
Biscuits (home-made)	35	100	287
White potatoes (baked)	130	149	114
White potatoes (mashed)	100	112	112
Sweet potatoes (boiled)	100	204	204
Roast beef	100	357	357
Beefsteak (tenderloin)	100	286	286
Pork chops	70	113	161
Egg (boiled)	50	83	169
Lima beans	80	128	160
Cabbage (boiled)	100	5	5
Oatmeal (boiled)	100	201	201
Shredded wheat biscuit	29	109	375
Grapenuts	65	247	280
Cornmeal mush	115	96	83
Puffed rice	14	54	351

In table 1 the chemical composition of rice is given in comparison with that of white potatoes, sweet potatoes, wheat flour, macaroni, oatmeal, corn meal, green corn and hominy, all of which are starchy foods and are regular articles of diet.

Rice is here shown to contain practically the same amount of protein as corn meal and hominy, about four times as much as either white or sweet potatoes, and only about two and one-half per cent less than wheat flour. It is low in fat as compared to such foods as unbolted corn meal and oatmeal, but contains three times as much as white potatoes. It is very high in carbohydrates, with a percentage of 79.0. In the percentage of ash it ranks between hominy and wheat flour (straight grade). Rice has about the same fuel value per pound as wheat flour, macaroni and hominy; slightly less than oatmeal and unbolted cornmeal; and over four times as much as white potatoes. The moisture content of rice is only about one-eighth of the total weight, while that of white potatoes comprises nearly four-fifths of the weight as purchased.

Table I gives the chemical composition and fuel values of foods as purchased, but does not take into consideration any parings or other necessary waste. In table 2 the fuel value of the foods listed are figured on the cooked foods. The value of boiled rice is here compared with the value of other important food materials commonly used.

It is shown in table 2 that in an ordinary helping of boiled rice (100 grams) we get not only that bulkiness so important in any diet, but also 112 heat or energy calories of

food. This figure is as large or larger than that secured in the ordinary helping of any of the other starchy foods, except baked white potatoes, where a helping of 130 grams furnished 149 calories. In food value per 100 grams rice compares favorably with green corn, boiled hominy, and white potatoes. Such foods as the meats and legumes are given here not as a matter of comparison, but to show that the food value of a mixed diet would be in all cases satisfactory if rice were used in connection with these foods. As a breakfast food puffed rice compares favorably with the most common breakfast foods used in this country. From 100 grams of puffed rice, we secure 351 calories as compared with 83 from corn meal mush, 280 from grapenuts, 375 from shredded wheat biscuits and 201 from boiled oatmeal.

In addition to a consideration of the chemical composition, food value, palatability, and the property of being easily prepared for consumption in a variety of ways, a good food to be used as a staple articles of diet should also be easily digestible. Rice is recognized by the medical profession as one of the most easily digestible foods available for invalids, or others suffering from stomach troubles, and particularly suited for those who take but littl exercise. Andrews, in "What to Eat" is authority for the information contained in table 3.

At the present time when practically all food materials are very expensive and people of moderate means or earning small salaries are finding great difficulty in providing their tables with a plentiful supply of good and nutritious foods, the question of cost is one of first importance. The American housewife, who has long been criticised because of her wastefulness, is now hunting articles which supply the necessary amount of food, a minimum amount of waste, and which are within reach of her purse. The cost to consumers and the amount of food secured from the investment of one dollar in rice is shown in table 4, in comparison with some of the other commonly used foodstuffs.

Table 3. Time Necessary for Rice and Other Starchy Foods to Digest

Foodstuffs—	Hours required for digestion	Foodstuffs—	Hours required for digestion
Rice (boiled)	1	Grapenuts	2 to 3
Bread (baker's)	3¼	Oatmeal	2 to 3
Bread (toasted)	3	Rice (flaked)	1
Cornbread	3¼	Tapioca	1¼
Cornstarch	3	Shredded wheat	3

Table 4. The Present Price of Rice as a Food. Compared with That of Other Commonly-Used Foods

Foodstuffs—	Retail price per unit* cents	Retail price per pound cents	Necessary waste in cooking per cent	Food Value per lb Purchased Calories	Food secured for $1 Calories
"Broken rice," lb	10	10	0	1630	16300
Head rice, lb	16	16	0	1630	10188
White potatoes, lb	5	5	15	327	6540
Sweet potatoes, lb	5	5	10	523	10460
Bread (baker's), loaf	10	10	0	1140	11400
Oatmeal, pkgs.	15	10	0	1860	18600
Eggs, doz.	70	47	5	684	1453
Cheese, lb.	50	50	0	2165	4330
Butter, lb.	75	75	0	3605	4807
Bacon (smoked), lb	60	60	0	2930	4217
Ham (boiled), lb	70	70	0	1320	1886
Beefsteak, lb.	40	40	5	1264	3160
Pork chops, lb	45	45	20	292	652
Lima beans, lb	20	20	0	1625	8125
Green peas, lb	15	15	0	465	3100
Milk (whole), quart	20	10	0	325	3250
Cabbage, lb.	7	7	3	140	2002
Wheat flour (patent), lb	8½	8½	0	1640	19352
†Corn on cob, dozen	50	‡8	0	453	5663

*Prices in Lake Charles December 1, 1919.
†Price of corn without cob.
‡Waste subtracted.

In table 4 it is shown that broken rice furnishes for the money invested considerably more food than any other foodstuff listed, except oatmeal, which is primarily a breakfast cereal, and wheat flour which is made from wheat the price of which is controlled by the U. S. Government. At the present prices, a dollar's worth of broken rice furnishes the same amount of food as $1.60 in head rice, $1.56 in sweet potatoes and $2.49 in white potatoes. Those who buy "head" rice will find it only slightly more expensive than oatmeal, sweet potatoes and baker's bread. The food in "head" rice which may be bought for $1.00 will cost $1.25 in lima beans $3.29 in green peas, $2.41 in smoked bacon, $2.35 in cheese and $1.56 in white potatoes.

Much has been written, many experiments have been conducted; there has been quite an agitation in the past few years concerning the disease beri-beri in connection with eating polished rice. In the United States, where rice has been and should always be used in a mixed diet, containing such foods as meats, eggs, dairy products, vegetables and fruits, there is no danger of any one contracting this oriental disease whether the rice be polished or not. The vitamins lost by rice in the polishing process, of which food faddists write so much, as well as the fat in which rice is most deficient, can be easily secured in some of the other foods of a mixed diet. Rice, like many other of the most important foodstuffs is a starchy food, and, like them, is not expected to furnish sufficient fats and mineral salts to make a balanced ration in itself. Who would think of eating as a sole article of diet, only wheat bread? If such a thing were done there is no doubt that the person so doing would soon become weakener by malnutrition.

It is seen that rice is not only wholesome, palatable, nutritious and easily digestible, but it is also very economical as a food because it lends itself to the preparation of so many excellent and delectable dishes, both when first cooked and when used a second time.

After all, rice is still one of our cheapest foods, and can be used very effectively in reducing the high cost of living.

LOOK OUT FOR THE "COFFEE" BEANS

The Department of Agriculture warns buyers against two so-called coffee beans—the "South American coffee bean," the other as "new coffee bean," which are being exploited by extravagant statements in advertisements. The former is the jack bean, the latter the soy bean. Both are well known plants, and there is no justification, says the department, either for extravagant advertising under new names nor for exorbitant prices for the seed.

The use of the seeds of various legumes and cereals as coffee substitutes is not new. Legumes which have been used or exploited as coffee beans include the soy bean, cowpea, chick pea, horse bean, and jack bean. Other legumes used to some extent as coffee substitutes, all of which are native species and commonly known as coffee plants, are coffee berry or coffee weed, coffee bean plant or berry, and the Kentucky coffee tree. The seeds of a few of these legumes, especially the soy bean, possess some merit as coffee substitutes, but the desirability of any is a matter of individual taste. This use has led to the extensive advertising of such seeds at various times under misleading names by enterprising individuals, and even to their large use as adulterants of the true coffee.

The soy bean, almost since its introduction into America, has been exploited at different times as "cof-

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Food Poisoning

By W. L. DODD

Assistant Director of Sanitation and Hygiene, Pease Laboratories, New York.

MAN learned that menace lurked in certain foods through bitter experience. He soon found that certain flesh foods must be avoided. A brilliant hued fruit attracted his eye to the qualms of his stomach. Many of the fungi were tempting, luscious, several proved fatal. Usage drove home the lesson that certain foods were palatable—others hazardous.

He found food could be preserved by simple processes as drying, smoking or salting, that food which had been heated kept better than the raw rations. Gradually he attained a confidence in cooked food as a deterrent of illness following the meal. Even heat, however, he learned was not an absolute bulwark. Food poisoning, still unfathomable, occasionaly occurred.

It was not until just previous to the inauguration of Abraham Lincoln that the ptomaine theory of explanation was promoted. A few years later, an apparent relationship was observed between food poisoning outbreaks and a septicaemic condition of the animals whose flesh was consumed. In 1888 the role of bacteria as causative factors in food poisoning outbreaks was established, a germ of intestinal type being isolated by a German investigator, from the human victim and the beef eaten. Since that time, similar or closely related germs have been isolated from other German, and English outbreaks, also the eaten foods, firmly establishing the alliance of certain bacteria, infected food and illness.

Today infected food is recognized as the most important cause of food poisoning. Other sources are known —an individual idiosyncracy to specific foods; presence of harmful chemicals in food; and foods inherently poisonous — but they are perhaps so relatively immaterial as to need but brief mention.

Food idiosyncracy affects but a limited number of persons. They have found by experience that they cannot eat certain proteid foods, as egg albumin, cereals, cheese, tomatoes, pork, fish and shellfish. Whenever the attempt is made they are acutely afflicted with a bloated itching skin eruption or some gastro-intestinal distress. This peculiar idiosyncracy to certain foods has usually existed since early childhood, and may be avoided by careful selection of food or medical treatment.

The use of chemicals and preservatives in food is a question which has aroused endless controversy. On the one side the defender claiming conservation through prevention of food spoilage; on the other, the equally vituperative antagonist anathematizing their use in no uncertain manner. Out of this turmoil the usage of a limited number of preservatives has emerged.

Lead chromate was used formerly, to impart an enticing color to confectionery. Other poisonous metals have also been used in the past, as well as colors in whose manufacture poisonous minerals, as mercury or arsenic, were employed. Now the addition of colors is limited to prescribed coal tar dyes, generally accepted as harmless. Tin has been indicted as a metal absorbed by canned foods. Modern progress has made this source of little consequence except perhaps for acid foods as various fruits, especially those stored for long periods. Maintenance of food in lead glazed earthenware is a possible source of metallic poisoning. Modern spraying of fruits and vegetables with insecticides, coupled with any subsequent inadequate washing, bears the potential danger that arsenic or other metals may be ingested with food.

Illness from inherently poisonous foods, aside from certain varieties of mushrooms, is of little danger in this country. The roe of certain fish during special seasons is claimed to be productive of misfortune. Toxic properties have been claimed for cheese and sprouted potatoes.

While idiosyncracy, metallic poisons and inherently poisonous foods must be considered, extensive outbreaks of food poisoning are almost invariably caused by infectious bacteria or toxins elaborated by bacteria in food. Hence food may contain hazardous germs, poisonous toxins, or both. The popular fallacy that ptomaines cause widespread food poisoning, is not based on a secure foundation.

Putrefactive changes as a cause of illness, early obtained acceptance, especially when science proudly pointed to sickness among animals injected with extracts of putrid meat. Feeding experiments, the usual way food is consumed, have been few and unsatisfactory. More recently, the chemist has demonstrated certain facts which indicate that ptomaines rarely, if ever, cause food poisoning.

Careful research showed that when food decomposes, it is not a simple process, as one moment wholesome the next, putrid. Gradual changes occur, which assault and rend the wholesome food into new products, gases are given off, the food emits a carious odor, and we speak of it as tainted. During the very last stages —and only then—of this putrescence, the ptomaines form. In other words, ptomaines mature only when the meat or food product is of such fetor as to insure its rejection.

Ptomaines may result from the action of very guiltless germs, on the other hand, a virulent disease germ might have little or no aptitude to evolve a ptomaine from food. There is no trustworthy evidence that ptomaines are toxic when swallowed. Time is required for ptomaines to form, by which interval the food is obviously too nauseous to eat. It is unlikely that ptomaines are a substantial force in producing extensive poisoning.

Bacteria, or their toxic products, cause a large majority of food poising outbreaks. Bacterial toxins differ in many ways from the toxic ptomaines. Bacterial toxins usually cause acute toxemia when swallowed. They seldom produce any change in the smell or looks of the food, and they are caused only by specific disease germs—each germ with its own toxin.

It is generally accepted that the germs of many of the infectious bacteria of which the typhoid bacillus is one, are locked within the cell wall of the germ and are only set free when the germ invades the human body with subsequent rupture of the cell wall. On the other hand, it is considered that a few other germs, for example, the diphtheria bacillus attacks human tissues, or other suitable nutritive sources, and develop soluble toxins outside the germ cell wall. Thus certain germs are only toxic after they enter the human body, while other bacteria preform toxins before ingestion. Either the bacteria are ingested with the food, later forming toxins or disease in the human body, or toxins

are accumulated in the food outside the body. In this latter group the botulism poison befalls.

Botulism may occur through the eating of ripe olives, flesh foods and vegetables. The evidence against fruits is not established. Botulism is a rare cause of death. The bulk of the reported cases have occurred in California and have been caused by foods home canned in that State. Until recently there was little indication that botulism terminated from factory canned products. Of fifty or more epidemics, but two or three have been suspected as possibly caused by factory packs. The more adequate facilities for sterilization probably explains the better showing of factory "packs." It is not unlikely that the type of food container—its ability to absorb heat, is a factor in the sterilization of the contained food contents. Death results from a poison formed in the food—outside the human body—by the growth of bacillus botulinus, a resistant spore forming germ. The toxin will only develop in stored moist food, kept dark, free from air, and held at moderately warm room temperature. Ordinary cooking process destroy the toxin. It is unlikely that toxin will form in dehydrated—highly acid—salty foods —or those preserved in syrups of the ordinary strength.

Botulism although very fatal may be viewed as a relatively rare source of food poisoning if we consider the numerous cases of intestinal distress, many of which are caused by contamination of food. Contamination of food with bacteria, with subsequent illness or disease developed in the human body following its eating, is generally considered as associated with members of a germ family broadly known as the colon-typhoid group. At the one extreme is the Bacillus coli a natural denizen of the human and animal bowel, and of the soil, at the other the Bacillus typhosus consorting only with a diseased plight of man. Midway between these two types, a sort of half-brother to each, is the Bacillus paratyphosus, and similar type organisms, some of which are found in the human bowel, others in the animal alimentary canal. The paratyphoid germs are usually less malignant than the typhoid germ, and inhabit the bowel less frequently than the Bacillus coli. Members of this paratyphoid group have been isolated as a source of food poisoning, especially by European bacteriologists.

However, paratyphoid group germs possibly do not cause or explain all outbreaks. It is not improbable that other bacteria not generally considered as infectious, may from time to time, produce gastro-intestinal disturbance of varying severity. Again, similar germs in different localities may vary in their virulence. The botulum organism appears to be more common to California, at least, more cases of the disease have been reported from that state. Can we assume that other germs possibly because of environmental conditions, or other factors, may be more frequent in some localities, and either practically extinct, seldom reported, or of materially lessened virulence in the other sections of the country or world?

In the United States, food poisoning, aside from that associated with acute contagions, does not seem to have been as vigorously investigated as in the European countries. The results of England and German investigators point to infection of food with various members of the paratyphoid group as frequent causes of extensive outbreaks. In this country, Jordan collected reports of food poisoning outbreaks in the United States, through a press clipping bureau, for two years, from October, 1913, until October, 1915. A group of 1,032 instances was collected, the major number being group or family outbreaks. The bacteriology of these outbreaks was not presented. In his book, "Food Poisoning," Jordan lists but one well studied food poisoning outbreak occasioned by the paratyphoid bacillus in the United States, infected pie-crust from a restaurant. Can it be assumed from the apparent paucity of data regarding infection of food in this country by the paratyphoid bacillus, that this organism is a relatively unimportant source of American food poisoning outbreaks, or can the cause be more accurately assigned to inadequate reporting of outbreaks and insufficient bacteriological investigation?

Savage, in his "Food Poisoning and Food Infections," records fifty-three scrutinized English outbreaks, of which forty-three were proved to have been caused by food infected with a member of the paratyphoid family.

Meat is a food frequently implicated in outbreaks, especially pork or beek. The flesh of the sheep is said to rarely cause infection. Other foods, such as milk and its derivatives, including ice cream have been held responsible for outbreaks. Vegetables and cereals have been less frequently accused, fruits, rarely.

Food poisoning outbreaks may be due to direct contamination of the product by infectious bacteria with subsequent illness, following its eating. Or the source of infection might not be as direct. For example, utensils may be contaminated with hazardous bacteria, later polluting wholesome food with which the utensil comes in contact. Flies and diseased body evacuations may become entangled to the later besmearing of food. Thus foods may be dangerous because of direct contact, or indirectly, through contact with a previously contaminated source. Certain foods, as milk, can be perilous either by a direct or indirect path of contagion. Typhoid fever, septic sore throat and diphtheria could cause human suffering by either of these pestilential routes. While milk may transport several of the coutagious diseases, it is probably rare for flesh foods to effectuate other than intestinal infections.

Direct contact of food with the infected dung of man, or diseased discharges of animals very likely accounts for a number of food poisoning outbreaks. The use of diseased animal flesh is another to-be-considered factor. In fact, a recent worker has reported paratyphoid germs from diseased body organs of animals, but he did not find them in the bowels.

The paratyphoid family, which English workers have frequently indicted as means of food poisoning, are not normal dwellers in the human bowel. They occur only during sharp bowel agitation or the subsequent convalescence—even up to the state of apparent health. Not all the lineage of this paratyphoid family are malevolent. Neither is it clearly established whether the bacterial cells of this family group form toxin outside the cell wall, or whether it is sealed within the cell and is loosed only when the germ wall ruptures. The cell bodies, or germs, are exterminated by a par-boiling temperature sufficiently applied. Their wrought toxins are reported as surpassingly heat resistant. In this manner, a member of the paratyphoid family might invade food, be heated and destroyed, yet the food still produce distress when eaten because of the heat defying toxins.

Contamination of human origin may be imputed to slovenly habits and heedless fingers. This may be exemplified by an English outbreak springing from the kitchen of a large institution. Fish purchased from the same source was served in the institution, and was also bought by the village housewives for their tables. Following the eating of the fish in the institution twenty-eight

cases of food poisoning broke out, while no illness was evidenced among the villagers. It was manifest that the fish was infected in the institution. Investigation evolved that the fish had been sliced, floured and cooked in the kitchen by a young woman. A sample of her blood was withdrawn—tested. It showed the presence of a germ from the paratyphoid group. In her faeces the same germ was ferreted out. Comparison proved it to be identical with the germ segregated from a body organ of a person who had eaten the fish and died.

Negligence on the part of institutions to provide convenient and adequate washing facilities may result in just such outbreaks, as the one described. Lacking water or the other necessities for washing and drying the hands, or soiled, squalid washrooms, or their location in an out-of-the-way inaccessible corner, may easily send smeared fingers into the kitchen from the toilet, later to handle or serve food.

While in this intestinal outbreak the fish was directly infected, meat may be diseased in itself or splashed with the diseased discharges of an animal and when eaten cause food poisoning. Other similar sources of contamination also occur. Several of the animals used for food are known to suffer various ailments caused in whole or part, by some member of the paratyphoid family. An epidemic fever of swine, a specticaemia and bowel inflammation of beef animals, and epidemic diseases of certain birds, are considered the result of infection with a paratyphoid group organism. It is possibly significant that the germs have been found frequently with diseased conditions of pork and beef animals, and that these flesh foods are those commonly incriminated in food poisoning outbreaks.

Although animals used for flesh foods are sources of food poisoning, smaller members of the same family. not used for food, may be considered with suspicion.

Rats and mice may be a means of contaminating food with the paratyphoid group germs. Mouse typhoid is a well known disease of rodents. The infected rats pass the disease from sick to well. There is possibly another source of transmission, the bacterial rat poison. The specific germ has been isolated and is put up commercially in various forms for distribution around rat infected premises, for rodent destruction. The opinion has been advanced that mouse typhoid is not fatal for man. Outbreaks in man from accidental use of bacterial rat poisons are reported nevertheless. In one instance, a Japanese outbreak, a wooden vessel was utilized to mix mouse typhoid virus with warm water. Inadvertently the vessel was set away without washing, and later used to hold some cooked vegetables served as part of a meal. Two days after eating the cooked vegetables thirty persons were attacked—three died. Mouse typhoid germs were recovered from the body organs of the fatal cases and the vegetables served.

Rats may recuperate from infection with mouse typhoid and shelter the germs for long periods. These rodents often have abundant opportunity to pollute food. They should not be tolerated around a food manufacturing or serving institution, nor should their destruction be attempted by sowing the prepared virus broadcast around the premises.

There is much which indicates that raw foods or those inadequately cooked are perhaps the most frequent sources of food poisoning. Heat destroys germs with which it has contact. However, cooked food may instigate food poisoning. There are two reasons for this, the reputed resistance of the toxins of the paratyphoid group to heat, withstanding as they are said to do, a temperature of 250 degrees F., and the failure of the heat to thoroughly penetrate and permeate the food bulk. Furthermore, certain foods as meat are poor conductors of heat. Tests have been made of the temperatures of fair sized pieces of meat exposed to varying cooking customs. Grilling gave a temperature of 130 degrees F., roasting 150 degrees F., and boiling 185 degrees F. All of these temperatures are below 212 degree F., that of boiling water. A six pound ham was dropped into cold water and put on the range. The water boiled when the temperature of the ham was but 80 degrees F. After two hours cooking, the temperature of different parts of the ham ranged from 115 degrees F. to 150 degrees F.

Meat is not the only food which cooking sometimes fails to make safe. At a public dinner in California the cook who prepared the spaghetti, was a typhoid carrier. Nearly a hundred people who ate this contaminated food, came down with typhoid fever. A dish of the food was made up in the laboratory, following undeviatingly the procedure of the carrier who prepared the infected sustenance. Typhoid cultures were mixed throughout the food mass and the vessel baked until visually overcooked. The interior did not even attain a pasteurizing temperature and typhoid germs were readily extricated less than three inches below the well browned surface.

The features of bacterial food poisoning outbreaks, apart from botulism or those caused by acute contagions are much alike. There is a period, frequently about a day, from time the food is eaten until the victim becomes ill. The interval varies, brief, as a few moments, sometimes several days. The abrupt lapses indicate illness from a toxin contained in the food, just as prostration rapidly follows the drinking of poison. Longer interims suggest germ infection, time being required for toxins to be elaborated within the human body following the eating of the germ contaminated food. The onset in any case is sudden. The common symptoms are vomiting, diarrhoea, and excruciating gripe of the bowels. The majority of those who eat become ill. The number of deaths is usually low.

The prevention of bacterial food poisoning outbreaks is not simple. There are many ramifications by which food may be contaminated. But these infection paths should be blocked, or at least obstructed.

Food should be drawn from a healthy source. For example, vegetables from unpolluted soil, meat from sound animals. The human operatives should be healthily sound, painstakingly probed to weed out carriers of contagion. Toilets should be provided and every inviting facility extended for maintaining clean hands. The premises and processing operations should be under the sanitary scrutiny of skilled investigators—competent to do more than condemn filth, but able to dig out the hidden health menaces. The tools and utensils which touch the food should be wholesomely clean and sterile. Rodents should be exterminated from the premises. Food which so permits should be thoroughly and evenly cooked, at a temperature sufficient to destroy any contained bacterial toxins or bacteria.

Many foods could probably be brought to a point of sterilization only with considerable difficulty and then perhaps at the risk of impairing their flavor or appearance. The spaghetti outbreak is illustrative of this point. For such foods every effort should be expended to prevent their contact with soiled fingers or any other possible source of contagion. Following cooking, food should either be rapidly sealed

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Candy--Its Place in the Diet

By M. E. JAFFA, Professor of Nutrition, University of California

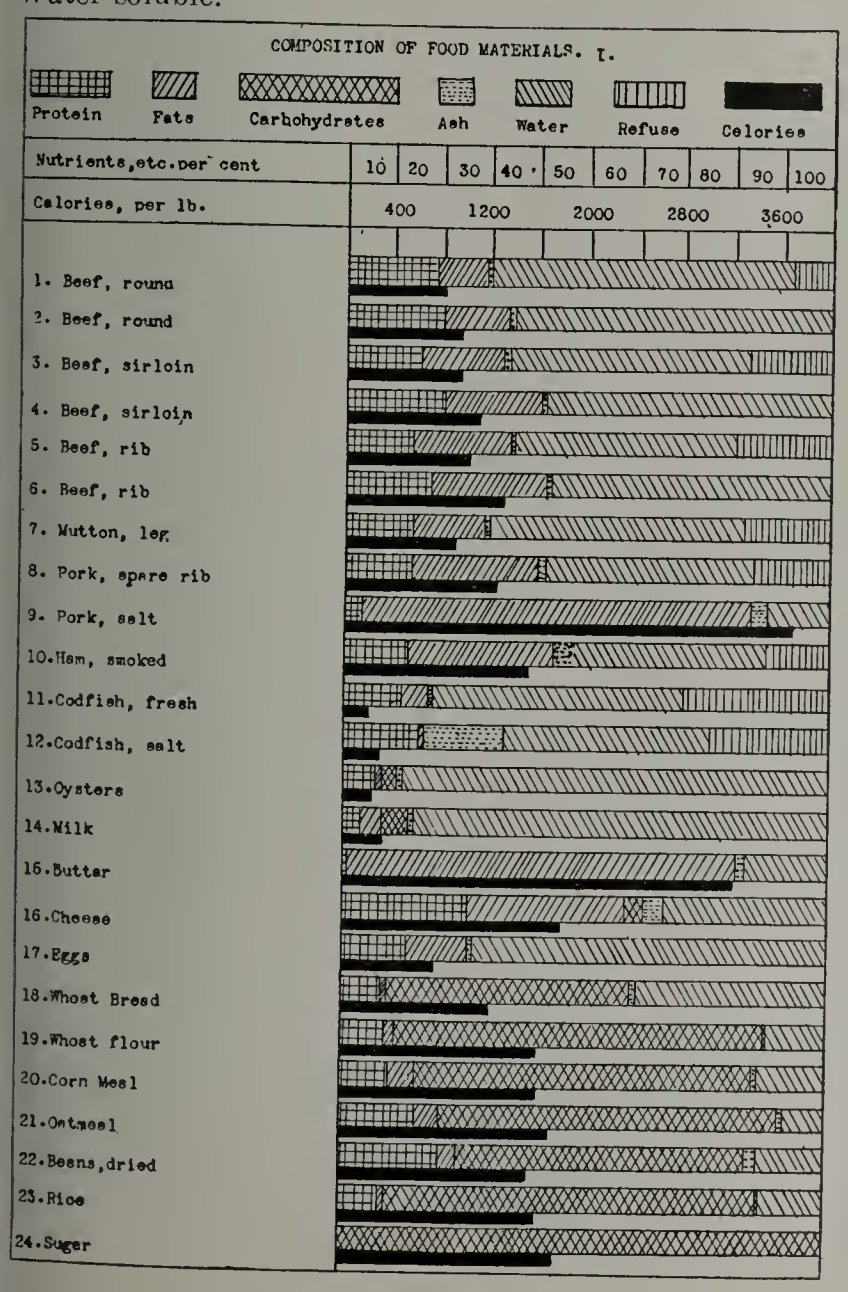
This Eminent Authority on Nutritive Foods Gives Candy a High Place as a Nutrient Among the Great Staples, Such as Beef and Pork and Bread and Rice and Milk. He Goes Further and Urges Confectioners to Appeal to the Research Division of the Government to Devote a Part of Its Attention to Confectionery.

IN discussing the value of candy as a food, or its place in the diet, due consideration must be given to the functions of food in general; and to the function of the nutrients in particular.

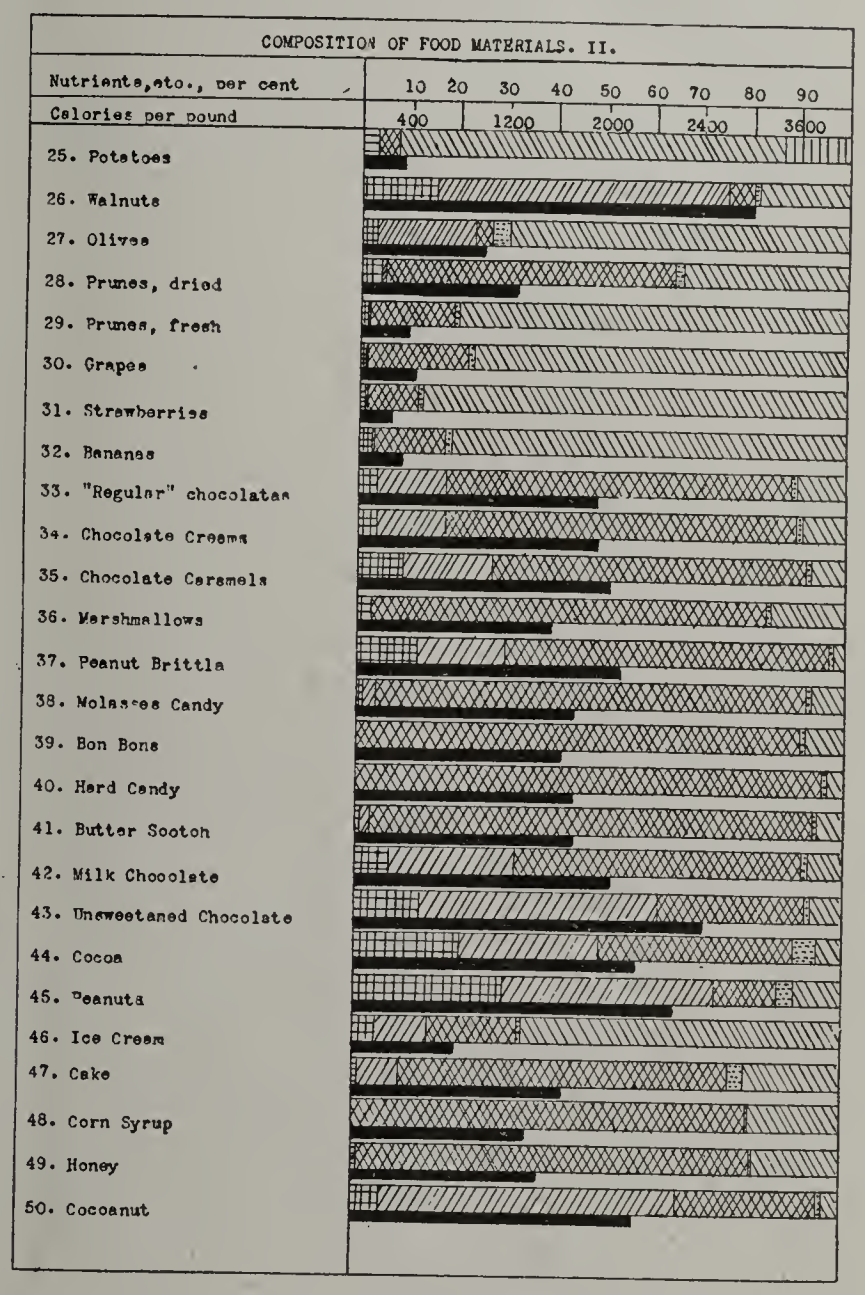
What do we mean by nutrients? They are those component parts of a food which can be used for growth and development and maintenance of health and activity in the animal body. For our purpose the most important are:

1. Protein,
2. Fats,
3. Carbohydrates,
4. Ash, and
5. Vitamins.

A desirable food, then, should contain good protein, adequate mineral matter, sufficient calories, and the two vitamins, Fat-soluble A and Water-soluble.



This chart shows thc rclative values of staple foods as regards their healthful and strengthening properties.



This chart shows the relative values of candies and fruits as regards their healthful and strengthening properties.

Is Candy a Food?

Does candy conform to any of these requirements? In other words, can candy be termed a food?

Let us analyze candy with special reference to the nutrients above indicated. Confectionery is a manufactured product, and therefore it behooves us, in order to determine the nutritive value of the result of the handiwork, to examine into the nutritive value of the separate constituents or ingredients. These are, in the main, as follows:

1. Sugar.
2. Syrup.
3. Honey.
4. Nuts, such as walnut, almond, peanut, cocoanut, etc.
5. Condensed milk.
6. Egg albumen.
7. Colors and flavors.
8. Chocolate.

9. Cocoa.
10. Egg substitutes.
11. Salt.

Sugar Is Par Excellence

Sugar, the chief ingredient of candy, is *par excellence* one of the best sources of muscular energy at command of man; that is, when used rationally. When used irrationally, digestive disturbances are bound to follow. There is no one food or food product which will yield quicker returns to the body in shape of energy than will sugar. It matters not whether it is cane sugar, or beet sugar, or honey sugar or glucose, etc. Provided each is pure, the net returns in calories to the body are identical.

It is therefore seen that sugar gives to candy a high food value.

Syrups

Syrup has naturally a much lower food value than sugar as such, on account of its water content. This varies with different syrups. The sugar in the syrup is identical with the sugar referred to as such. Honey is a more concentrated sugar than is usually met with, containing as it does less water, and therefore approximately nearer the value of sugar than any of the manufactured articles.

Nuts

The nuts are entirely different, in that they contain little, if any sugar, but are rich in protein and fat. It must be said, however, that while the shelled walnut contains as much protein on the average as is noted for meat, and the peanut fifty per cent more, still the physiological value of the meat protein is ahead of the nut protein on the average as is noted for meat, and the peanut fifty per cent more, still the physiological value of the meat protein is ahead of the nut protein; due to the difference in content of the more necessary or essential units of structure, or amino acids.

Chocolate

Chocolate is in itself a concentrated food of high nutritive value. It is rich in fat, and in this respect very similar to the edible nuts. The protein content is thirteen per cent but it has not the same physiological value as protein of milk or meat. In other words twelve per cent milk or meat protein is far more desirable and essential for growth and development of the young than twelve per cent chocolate protein. The average caloric value per pound is 2860.

Cocoa

Cocoa results from processing chocolate in order to extract the fat. Cocoa, therefore, is richer in protein, mineral matter and carbohydrates than chocolate, but lower in fat; whereas chocolate contains fifty per cent fat, the corresponding figure for cocoa is twenty-one per cent. The protein content for chocolate is thirteen and that for cocoa twenty-two. Owing, however, to the higher fat per cent in chocolate, the caloric value of cocoa is lower, being but 2300 as against 2860 for chocolate.

Ice Cream Not So Nourishing

With the exception of marshmallow, ice cream does not possess fifty per cent of the caloric value of candy.

Candy a Valuable Food

It has been clearly demonstrated that candy, nutritiously considered, is a very valuable food. The next question is,—Can it be used as are the staples,—bread, butter, meat, etc? Or must it be consumed with reservations?

To answer these questions intelligently, it must not be forgotten that while it is true there must be sufficient nutrients in a diet, it must also furnish bulk or digestive disturbances will follow.

Candy does not furnish bulk. It belongs to the class of concentrated foods, such as nuts, cheese, etc. The low percentage of water in the candies is a further indication of their concentration. They therefore could not be expected to have a place in the main part of a meal, but could form a dessert or part thereof, depending on the meal. Their large use, however, will probably always be as an "in-between," that is, eaten between meals.

There are some authorities who claim that the energy requirement of the body is the first consideration: —see the body has plenty of fuel.

Candy a Source of Energy When Rationally Used

When rationally used, candy is one of the best sources of this energy requirement. For children, probably candy will be best served as dessert, or with some other food, as it is too concentrated to be fed to any extent alone, unless it be for the child at play, candy can well be given as part of the "in-between" or extra food. The more energy put forth by the child at play, the more candy can be taken care of by the system.

There are many illustrations of the significance of substitution of candy and other sweets as a substitute for alcohol. Railroad clubs have been established at the expense of the company, and greatly to the sorrow of the neighboring saloon.

Time for Manufacturers to Wake Up

There are bulletins issued by our government, and there are bulletins issued by foreign governments containing large numbers of analyses of human foods, but the data for candy are conspicuous by their absence. It is time for the enlightened and progressive candy manufacturers to claim for their industry a fraction of the time and attention along research lines which has been devoted, and properly so, to other phases of food activities. This is necessary in order that the manufacturer may more intelligently advertise his products, and the consumer better realize the high nutritional worth of candy. —Candy and Ice Cream.

IT'S "MILK COW;" NOT "MILCH COW"

Hereafter it will be "milk cow" and not "milch cow"—at least so far as the U. S. Department of Agriculture is concerned.

This decision marks the termination of a controversy in which etymologists of the department have had not a little interest. Those defending "milch" have pointed to scriptural use and certain of the classics as establishing precedents, while the opposition has contended that dairymen, ranchmen, and farmers in general use "milk" instead of "milch" almost universally. The advocates of "milk" also favored that word because, they contended, it was more strictly an English word, while "milch" was akin to German. Since Americanization of language as well as ideals is an article in every patriot's creed, it is thought that this last sally of the "milk" defenders helped as much as any to decide the question in their favor.

THE FOOD VALUE OF THE BANANA

Viewed from a chemical standpoint, the banana has nearly the same food value as the Irish potato. Carefully conducted experiments in animal feeding, however, have shown that the banana is in certain respects much inferior to the potato. The potato, as is well known, possesses very pronounced anti-scorbutic properties. An ounce of potato soup is practically equal to the same quantity of orange juice in the prevention of scurvy in young infants. But the banana is much inferior to the potato in the amount of its vitamin content.

Recent experiments conducted by Lewis showed that guinea pigs fed on an exclusive diet of bananas die in twenty to thirty days. Nearly an ounce of bananas a day, in connection with a diet of rolled oats, is found sufficient to prevent scurvy, but does not support normal growth in young animals.

Government Advertises to Change Nation's Flour Consumption Habits

The United States Grain Corporation Engages in Educational Campaign to Teach the Consumer to Shift Demand from Hard to Soft Wheat

LAST fall the United States Grain Corporation found an anomalous and unreasonable situation prevailing in the nation's consumption of flour. Despite a great wheat crop and an unusually large production of flour, it found the people of the country paying constantly rising prices for a certain grade of flour and neglecting an equally valuable grade. The consumption was almost altogether in flour made from spring-sown hard wheat, to the detriment of flour made from soft, red winter wheat, and this despite a shrinkage in the crop yield of spring-sown hard wheat by 150,000,000 bushels and a corresponding increase in the yield of winter wheat.

The consumer was, therefore, disregarding the laws of thrift by unwise spending. But the consumer was not altogether to blame. The fault lay partly with marketing conditions and partly with ignorance or misconception of the nutritive value of one color of flour as against another. Nor was the retailer to blame for stocking the extremely white brands of flour. He was naturally inclined to sell what there was the greatest call for.

For this situation, though the Government did not directly say so, certain milling companies and flour salesmen were particularly to blame. They had sold the country on the belief that the only good flour was made from hard winter wheat. They had also sold the baker on the fact that the "strong," or hard winter wheat, makes flour that furnishes the most loaves per barrel. At the same time, a mysterious propaganda, inspired by unknown persons, was spread to the effect that a flour shortage was impending, and hence there is reason to believe that considerable flour hoarding ensued.

To bring about a readjustment of this situation, and to promote the habit of wise spending among the people, the grain corporation resolved to make flour manufactured from the cheaper soft wheat available to the consumer in small packages at moderate prices. There was offered to the retail trade, particularly in the large cities, under the brand of the United States Grain Corporation, a standard pure wheat straight flour in 24½- and 12¼-pound packages. The retail price report of the Bureau of Labor had reported that for twenty months the average price of 12¼ pounds of flour, equal to one-sixteenth barrel, had been 81 cents to 89 cents. The Grain Corporation made possible the retail price for the same quantity at 75 cents.

It was announced at the time that the flour trade should understand that this campaign was not designed to discredit their regular business or the brands which they ordinarily handled. They were assured that it was simply part of a general campaign on the part of the Government to reduce the high cost of living and to encourage thrift. It was also announced that it was no part of the Grain Corporation's plan to dictate to the consumer what sort of flour he should buy, but to provide an opportunity to purchase more less costly goods if desired.

According to the statement of Julius H. Barnes, United States Wheat Director, "the extraordinary willingness of a section of our people to disregard prices in their purchases has forced a premium on certain qualities entirely out of line with the ordinary relation. The extraordinary condition is presented of the retail trade handling standard flours ranging in price from $1.40 to $2 on the one-eighth barrel package. In some sections, retailers, finding their customers not complaining at the continued advance in the certain qualities and brands, made no effort to provide the lower-priced flours, even though these flours were of such quality as were ordinarily sold at about the same price.

"I anticipate that the mills themselves, finding that there is a section of the people appreciating this standard quality of flour, which can be sold at lower prices, will gradually take over the supplying of the retail trade, but we are prepared to continue to supply that retail trade until there is a demonstration, either of the permanency of a consumer market, or else a clear indication that not enough of our people will practice thrift and economy to warrant the distributing trade in carrying this flour in stock."

Having arranged for the distribution of the flour, and with the aim of a balanced consumption between spring-sown hard wheat and soft, red winter wheat, the Grain Corporation then began a series of educational advertisements in the newspapers. Two-column space was purchased and under the seal of the United States Grain Corporation, bearing a starred and striped shield in a circle stamped on the breast of a flying eagle, the text of a typical advertisement read as follows:

"Government Flour Cuts Your Living Costs.

"There has just arrived in the local markets a supply of Government flour made of soft, winter wheat.

"The Government is offering this at prices that give every flour user in this locality a chance to cut down flour bills. Make the most of your opportunity by buying United States Grain Corporation Standard Pure Wheat Flour. Here is an excellent flour of straight grade used by the best bakers and grocery trade.

"You can buy this flour today at prices around 75 cents for 12-pound packages and $1.50 for 24½-pound packages.

"Retailers may buy Government Flour in paper sacks in car lots at $10.43 per barrel, or in cotton sacks at $10.80 per barrel. (In less than car lots, paper $11.15, cotton $11.55.)

"United States Grain Corporation Standard Pure Wheat Flour is on sale to-day at the following dealers;"

There follows a list of retailers and wholesalers who have the flour in stock, or have ordered it.

Another advertisement said:

"You Can Help Bring Down Flour Prices.

"The cost of most staple foodstuffs showed material reductions during the week of January 3 last, as compared to the corresponding week of 1918.

"But the cost of onions, rice, Grade B milk and Wheat Flour showed an increase.

"There is now an opportunity for every flour user to bring down the rising prices of flour.

(Continued on page 37).

Punish Offenders of "Pure Food" Law

Government Wins 49 of 50 Cases Brought Under Food and Drugs Act

FIFTY food and drug cases are reported as having been terminated in the Federal courts in a rceent Serviee and Regulatory Announeement Supplement, No. 64, of the Bureau of Chemistry, United States Departmcnt of Agrieulture. The eharges of the Government were upheld in 49 of the eases, but in one seizure aetion the deeision of the eourt was in favor of the elaimant of the goods.

Ten actions were based on the adulteration of tomato produets, such as eatsup, puree, pulp, paste and the like. The most frequent charge was that of deeomposition resulting from the use of moldy or rotten tomatoes in preparing the products. The speeialists of the Bureau of Chemistry have given a great deal of attention to the improvement of tomato produets. Not only have a large number of proseeutions and seizurcs been made, but experimental work and educational eampaigns have been eonducted to aid the packers in developing methods to eliminate all spoiled tomatoes. There has been a marked improvement in thc quality of sueh produets, but some paekers, either as the result of carelessness or from a deliberate disregard of the requirements of the law, still oeeasionally use tomatoes unfit for food.

Canned salmon was the basis of four seizures. Spoilage of the salmon was the charge made in eaeh seizure. In three of the eases the court ordered the salmon destroyed, while in one case the salmon was released for use in the manufaeture of fertilizer. Investigations have shown that some eanners of salmon do not always take proper sanitary methods in putting up their produet. Studies by the speeialists of the Bureau of Chemistry to improve the methods of paeking salmon in order to prevent eontamination are under way.

Fined $400 for Misbranded Vinegar

Other prosecutions and seizures covered by the notiees of judgment inelude a shipment of sardines which were destroyed, bccause they consisted in part of filthy, deeomposed, and putrid animal matter, and three shipments of olive oil adulterated with eottonseed oil. An artificial vinegar labeled as eider vinegar resulted in the party responsible for the violation being fined $400. One shipper who failed to appear to defend himelf on the eharge of adding water to milk was fined $200 and costs. A shipment of milk from whieh part of the butter fat had been extraeted resulted in the party responsible being fined $10 and costs. A plea of nolo contendere was made in answer to the eharge by the Government of shipping frozen eggs eomposed in part of filthy, decomposed, and putrid animal matter and a fine of $50 imposed by the eourt. A shipment of deeomposed apple butter was destroyed. Two shipments of soaked ripe lima beans which were sold as green lima beans were seized, as was a shipment of gelatin consisting partly of glue and containing copper and zine.

Seven actions under the Food and Drugs Aet were based on the charge of adulteration and misbranding of proprietary medieines. Fines ranging from $10 to $100 were imposed in these cases, the charge being in the main that there were false and fradulent claims as to the curative powers of the preparations. Three prosecutions were based on the misbranding or adulteration of mineral waters whieh were reeommended by the proprietors for the treatment of various diseases. In one of these cases in whieh the defendant entered a plea of guilty, a nominal fine of only one eent and costs was imposed by the court.

Charges of short weight were sustained against shipments of macaroni and spaghetti. Short weight was also established in one shipment of olive oil.

Causes of Olive Poisoning Found

Lovers of ripe olives will be relieved and interested to know that reeent instances of ripe-olive poisoning were caused by olives of one or two brands put up in glass jars, and that such praetice has bcen discontinued in California upon the adviee of the State health authorities. The established faet that faulty rubber rings used in sealing the bottles admitted air whieh caused the *botulinus bacillus* to develop in the warm atmosphere of the home, and the intimation that the rubber rings, whieh were manufaetured during the war, were a part of an enemy plot to poison consumers of olives and other bottled goods, is brought to our notice by California papers. Investigation has shown, too, that some of the attaeks were due to other causes and werc hastily laid to olives, perhaps because of the eurrent newspaper reports of olive-poisoning. The fact that rccent fatalities are the first sign of trouble the olive industry has experieneed in thirty years, and that the olives which eaused the trouble were paeked during the war, gives a certain plausibility to thc charges of the Los Angeles *Examiner,* which says:

"Reeent eases of botulism-poisoning from olives reported from Eastern cities may be traeed to defective, or possibly poisoned, rubber rings used for sealing glass jars. This allegation was made in a formal statement submitted to the United States Department of Justiee on behalf of interested packers, who said that they had reaehed a point in their investigations that warranted such a step.

"Investigation of the various isolated reports of botulism-poisoning showed, according to the statement to the Department of Justice, that only olives packed in glass had been affected. This led to a careful investigation both of the containers and of any variations from usual methods that might be made in packing olives in glass.

"In the eourse of the inquiry the rubber rings used as air seals were submitted to ehemical analysis. It was found that one lot of seals was defieient in glycerin, and therefore not impervious to air, and that all the olives that had caused deaths or illness had been paeked in eontainers equipped with rings from that particular lot.

"These rings, it was further learned, were manufactured by one firm in the Middle West and were all dclivered during the period of the war. Thereupon the investigators

THE "WHY" OF THE PIE THAT DELIGHTS

Nearly Every Dealer Sells SIMON PURE

Armour's "Simon Pure" Leaf Lard

Made in the good old-fashioned way—pure leaf lard rendered in an open kettle.

Makes good old-fashioned pies, cakes, biscuits, golden-brown doughnuts—the kind that "melt in your mouth." No indigestion when "Simon Pure" shortens the pastry. Easily recognized by its beautiful crinkled appearance and by the Armour Oval Label—"The mark that takes the guesswork out of food buying"—on the pail.

ARMOUR AND COMPANY

CHICAGO

began a searching inquiry to find out whether the defect was accidental or was due to malicious action of some enemy sympathizer employed by the ring manufacturers."

Formerly, we are told, 95 per cent of California ripe olives were put into tin cans, which enabled the packers to sterilize this delicacy at a temperature of 225 degrees F., and thus kill all germs. In future, due to recent instances of poisoning, all ripe-olive packing will be done by this method, and additional precautions taken to protect the public. Further information as to the cause and action of the *botulinus bacillus,* the sort of olive to steer clear of, and the importance of the olive industry in this country is furnished in a speech by an expert chemist before the Home Industry League of San Francisco. Said he:

"There are more than forty thousand acres planted to olives in California, representing an investment of $20,000,000. The pack last year represented $3,500,000. To handle this output more than ninety million containers were used, and yet within a few months six instances of poisoning in different States have been magnified to such an extent that this great industry whose history dates back to Biblical times must suffer almost irreparable injury.

"*Botulinus* is not an infection, but an intoxication. The *bacillus botulinus* is a spore-bearing anerobic organism which thrives in room temperature. It is the toxin that produces the poison.

"The cases of botulism reported are not confined to ripe olives. The germ is found in practically all foods either in the canned or fresh state. The surest safeguard is complete sterilization, and this process is made easier and more effectual by the use of cans.

"The famed Mission olive, which represents 95 per cent of the California production, is free from suspicion, and to the credit of the legitimate ripe olive let it be understood that the fatal poisonings were due to a green olive colored and labeled 'Ripe.' The Government has now prohibited the use of the term 'ripe' on this character of packed article."

Dr. Harvey W. Wiley issues this caution through the columns of the New York *Journal*:

"When a package of ripe olives is opened it should be carefully examined for any traces of decomposition. If found to be very soft and mushy, it may be very justly put aside. A human life is too precious to take any chance.

"We do not refuse to drink milk because it occasionally carries a typhoid germ; we do not refuse to eat meat because it is occasionally spoiled and produces serious and even fatal illness. We do, however, take precautions to avoid such accidents. We pasteurize or sterilize our milk. If our meat shows by odor or appearance any taint, we push it aside.

"These are wise precautions. The same care should be exercised with the ripe olive. It is not quite just to pass on to canned food in general a stigma which very rarely is attached to one article of package goods that is not canned in the sense that it is sterilized."

A "Daily Health Column" issued by the Surgeon-General of the United States Health Service, as printed in the Los Angeles *Record,* says:

"Cases of food-poisoning recently reported, due to *botilnus* have developed principally from eating ripe olives packed in glass. The poisonous agent is a powerful toxin developed by this bacillus. In many instances the presence of the bacillus

(Continued on page 28)

Cheaper Jelly Possible by Using Grape By-Products

Jelly made from grape pomace is a new product of the grape-juice industry. Pomace consists of the skins, pulp, and seeds left in the presses after the grapes are crushed for grape juice and has been heretofore almost entirely a waste product. The United States Department of Agriculture, with the cooperation of a large producer of grape juice in the State of New York, has completed experiments showing that jelly can be made from pomace with very little expense for materials except sugar. The presses, cooking kettles, and other food-packing machinery required are already in most of the plants.

The price of grape jelly as now produced is about twice that of apple jelly. If the waste were utilized, jelly could probably be produced at about the same cost as from apples. Enough grape pomace is produced in New York and Michigan each year to make more than 20,000,000 eight-ounce glasses of jelly, it is estimated.

The method of making this jelly does not differ much from ordinary packing-house procedure. It consists in boiling the pomace with water for about 15 minutes, pressing, adjusting the acidity by the addition of tartaric acid, standardizing the juice by concentrating it to the required volume, adding certain quantities of sugar, and concentrating to 222-223 degrees F. The jelly has a strong grape flavor and looks very much like the product from whole fresh grapes.

In commercial application of the method, it is suggested that the wet pomace be freed from moisture in rotary driers and placed in bags for winter use. Drying does not seem to impair the jellification qualities, and it preserves the product for working up in winter when the burden of the grape-juice pressing season is over. This would result in keeping the machinery at work during a greater part of the year and distributing.

Under these conditions it will be profitable, also, to separate the seed and market it for its oil value. Under old methods, the operating and assembling charges were too great for the comparatively small amounts of seed produced, but by using the pomace for jelly a large part of the handling cost is removed from the grape-seed charges. The oil content of grape seed is comparatively small and it should be recovered by solvent extraction rather than by pressing or expelling. The product is a very light-colored, palatable oil and suitable to all purposes for which table oils are used.

Jelly made from grape pomace should not be labeled "Grape jelly." The label should plainly indicate the origin and should show the percentage of added tartaric acid.

PROGRESS OF AMERICAN INSTITUTE OF BAKING

(Continued from page 7)

fermentation and suggest a method of use which will produce the maximum efficiency.

In these days when labor is scarce and expensive the element of bakeshop efficiency is more important. At the present time the period of fermentation is counted by hours, and the time between the weighing of the raw materials and the finished loaf is long. Can this period be shortened? The opportunity for increasing the speed of production would seem to rest in the possibility of shortening the fermentation period, and the Institute is keenly interested in the work it is undertaking in this direction.

Standard Method of Analysis

One of the practical problems which we have before us is that of establishing standard methods of analysis. At the present time the careful baker buys his flour on certain standards of moisture and ash, and perhaps of protein. And yet, the methods employed by chemists in making these relatively simple tests are not uniform and the results vary too widely. The relatively small matter of burning of an ash introduces a number of variants which affect the results in analysis. Since the Institute is the official laboratory of your industry, we are in a position first, to determine the way an ash should be made and then to establish a standard method to be followed in our laboratory. Already we are being called upon to perform this service and we are now assembling the data necessary to fitting up a small control laboratory such as every baker needs to assist him in buying raw materials and controlling their use in the shop. With the growth of the idea that the baking industry is highly technical in character and can only be properly handled by men who have had special training in both theory and practice of the art, has come the demand for trained workers who are able to make the laboratory tests to which I have referred and to use such laboratory facilities as those we shall suggest.

Indications of Progress

I want to take this opportunity to tell you of a few indications that the baking industry is after all these years coming into its own. On January 31st there gathered at the National Research Council at Washington, a group of the most eminent scientists in the country. These men came to Washington to organize an Advisory Board for the Institute in order that through the Board and through the National Research Council the Universities might find a way to give practical attention to the production of a loaf of bread. In years past it has not been possible to catch the attention of the scientific mind. Too often our best scientists have felt that their profession compelled them to work entirely within the domain of pure science and but recently have they realized that, after all, the best opportunity for serving science is in the study of the things of intimate concern to our daily life. The war taught the scientists how to cling research with industry and has made it possible for us to organize behind us an Advisory Board, on which are the most eminent students in their respective lines. At this first meeting the keenest interest in the bakers' problems developed, and already plans are under way to give them special study. What does it mean to the baker to know that behind his loaf stands the combined scientific knowledge and possibilities of the finest laboratories and best trained men in the world? What must it mean to the housewife, who daily takes home her loaf from the corner grocery, to know that into that loaf have gone the results of the research of the men who are leaders in the science of nutrition.

CAUSES OF OLIVE POISONING FOUND

(Continued from page 27)

and toxin causes alteration in flavor of food described as musty or rancid. In view of the enormous consumption of canned goods compared with the occurrence of disease, danger from this cause seems slight. As a precaution, however, canned goods should be carefully inspected before use and those showing departure from normal in appearance, odor, or taste should be rejected. Boiling for one hour at 212 degrees F. will destroy the germ."

Another writer suggests a sensible way to tell good olives from bad by repeating the advertising phrase, "The nose knows."—*Literary Digest.*

Increasing the Use of Dairy Products in the Home

A MORE liberal use of dairy products in the home has long been urged by food officials, dietitians and experts of the Department of Agriculture, as a means of correcting malnutrition and reducing the cost of living. Not only is the greater use of whole milk advised but also the use of the secondary products of the dairy, butter, cheese, buttermilk, cottage cheese, and *skimmed milk* is encouraged.

HEBE

—a wholesome, nutritious food product, brings skimmed milk into the home as an economical liquid ingredient for cooking and baking and for use in coffee.

HEBE is pure skimmed milk evaporated to double strength enriched with cocoanut fat. It contains all the protein, mineral salts and sugar of the skimmed milk, plus the heat and energy value of a wholesome, easily digested vegetable fat. It is an excellent cooking ingredient, adding food value and flavor to foods prepared with it.

HEBE is produced under the most sanitary conditions and is sterilized in the hermetically sealed can. The label tells plainly what HEBE is, recommends it for specific uses, and states that it is not to be used in the place of whole milk for infant feeding. It is just as truthfully and frankly advertised and sold.

Our booklets "Today's Food Problems" and "HEBE—It's Dietetic and Economic Value" tell the complete story of how HEBE helps increase the use of dairy products in the home. Both sent free on request. Address 2509 Consumers Bldg., Chicago.

Chicago **THE HEBE COMPANY** **Seattle**

Making Margarine in England

GREAT BRITAIN is now well on the road to becoming self-supporting in the matter of her margarine supply. The average weekly output of the factories working is 9,000,000 pounds and it is anticipated that when other factories at present in course of erection are completed and in full working, there will be an increase in production of 50 per cent at least, all within six months from now.

The great development in margarine manufacture in Great Britain has been brought about by the war. But for the altered conditions of trade in England and the general dislocation ensuing it is doubtful if the Britishers would have risen to the occasion as they have done. In the year prior to the war (1913) the average weekly quantity of margarine manufactured in Great Britain was 3,600,000 pounds and the quantity imported from abroad (chiefly from Holland), 3,280,000 pounds, giving an aggregate consumption of nearly 7,000,000 pounds per week. At that time two-thirds of the home production came from the factories of the Maypole Dairy Company, the largest importers of Danish butter into England. During the war both production and imports substantially increased, the home production in 1916 being 5,500,000 pounds per week and importation over 6,000,000 pounds per week. Still further progress was made in 1917 when the home production had advanced to an average weekly outturn of close upon 8,000,000 pounds per week. Figures of imports in 1917 are not available, but the probability is that they were much reduced.

The necessity for the increased supply of margarine is explained by the fact that the imports of butter, for which Great Britain relied to a large extent upon Denmark, Sweden, Finland and the British colonies, fell away considerably, viz., from 8,916,000 pounds per week in 1913 to 4,686,000 pounds per week in 1916, and have still further seriously decreased in the meantime. Home production has also fallen off to about 4,500,000 pounds per week, which is the estimated outturn at present.

Margarine manufacture has now been taken up by the British government, which has factories in course of construction but none at present working; and, in addition to the Maypole Dairy Company's two factories, extended at a cost of $2,000,000, others are being worked by Lever Bros., the well known soap-making firm, and the Wholesale Co-operative Society. Two of the largest Dutch companies of margarine makers have nearly completed works in England, and the British Oil & Cake Mills have a factory at Hull nearly ready and are contemplating another in the west of England.

Not only so, but the English seed crushing mills have been adapted and extended for the purpose of dealing with farm kernels, grounds and copra, a branch of the industry of only minor significance before the war, and are thus able to furnish on the spot a very considerable proportion of the raw material required by the margarine manufacturers. According to Sir W. George Watson, Bart., chairman of the Maypole Dairy Company, about 90 per cent of the margarine manufactured now is made exclusively from vegetable fats and oils, and, in his opinion, the quality, when scientifically manufactured, is superior to that made with animal fats. Before the war the prices of vegetable fats were often equal to the prices of animal fats, but latterly the greater searcity of animal fats has made them more expensive than vegetable fats.

Sir George Watson recently stated that, although the margarine industry was first established on a large scale in Holland, Denmark was a very close second in the field. The Dutch makers established factories in Germany and Belgium when those countries put a tariff upon margarine, but they did not take any steps to establish works in Great Britain until the difficulties caused by the present war practically compelled them to do so. After first establishing themselves in Holland and Germany it paid them best, under the conditions, to import their raw materials (chiefly drawn from the British colonies) to Germany and Holland and manufacture them there for the British markets.

This, however, has now been altered, and Great Britain is importing herself the palm kernels from British West Africa, instead of Germany, who before the war took fully four-fifths of the total export from that colony.

In view of the prospective great shortage of butter and animal fats, caused by the depletion of European cattle stocks during the war, Sir George Watson considers that the future of British margarine manufacturers is assured, provided that they turn out a satisfactory quality. He does not consider that they are likely to require any protection (thanks to the effects of the war), but he suggests that politicians should mutually agree to encourage the manufacture in the United Kingdom of foods and essential and important articles like aniline dyes, leather, etc., even when that encouragement may in some few instances necessitate temporary protection or a development grant for a few years until the infant industry is firmly established and sufficiently strong and experienced to bear the competition.

NATIONAL SHELL GAME

(*Continued from page 10*)

turning out of containers strong enough for the service intended—a separate equation of much importance.

A very large proportion of the $50,000,000 of claims, filed annually against the railroads for damage to freight is due to breakage caused by poor construction of eontainers.

The railroad administration, as indicated, has taken steps toward compelling shippers to use crates and baskets better adapted to their purpose. This movement, of course, is aimed to bring about standardization. It aims, however, at more than uniformity of size; it aims to bring about the use of that size or those sizes that will permit uniform packing in cars and such other arrangements as will prevent spoilage, or at least reduce it.

The manufacturers of crates, baskets and boxes, say the specialists in the Bureau of Markets, favor standardization, for it will simplify their processes and reduce their expenses.

Co-operative selling organizations, like that of the citrus growers of California, are already doing much to promote uniformity and standardization. The distribution of fruits and vegetables, however, will continue to involve confusion and waste until standards of quantity and quality are nationalized.—This article is published by the courtesy of BUSINESS.

Serve

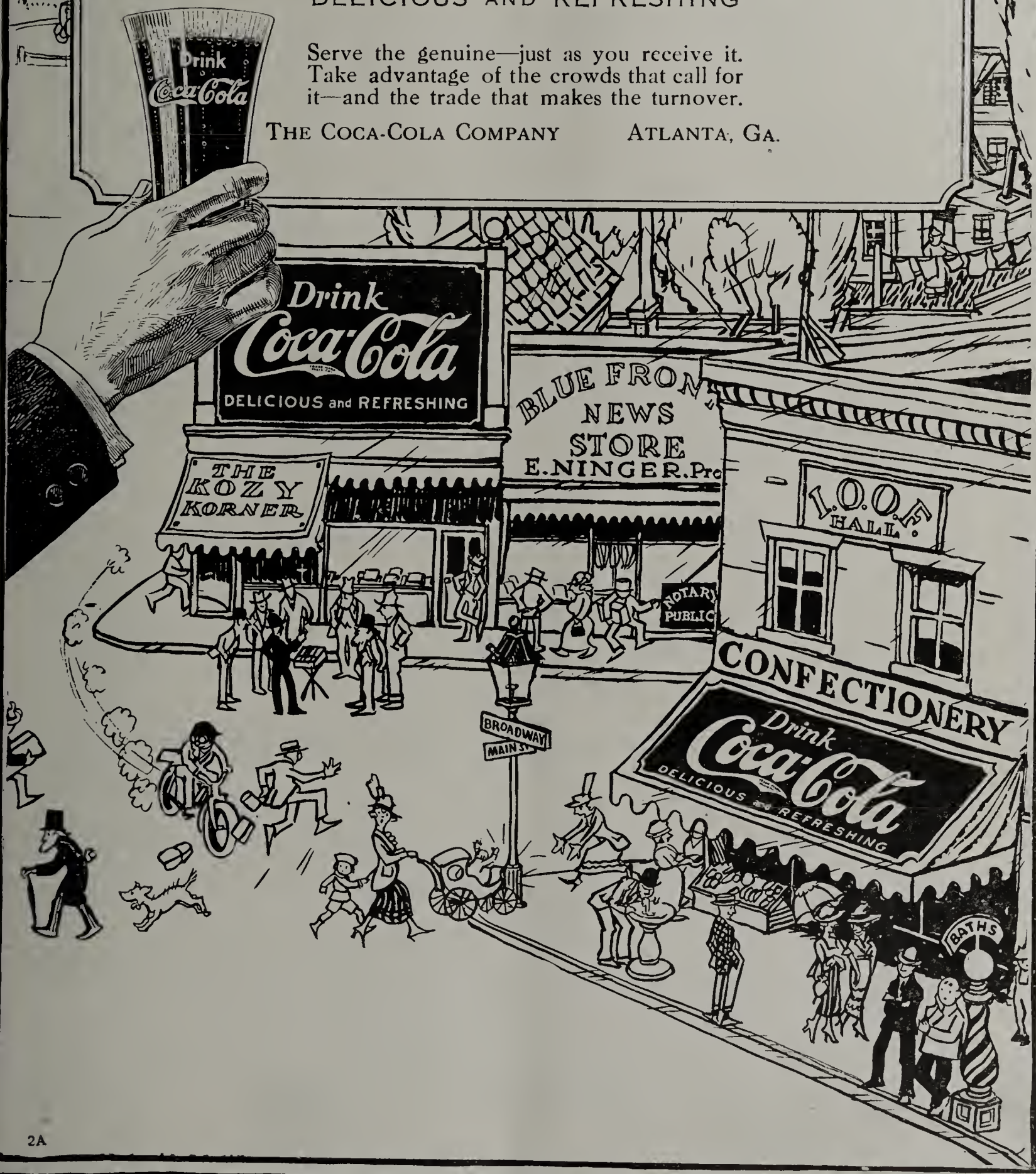
Coca-Cola

TRADE MARK REGISTERED

DELICIOUS AND REFRESHING

Serve the genuine—just as you receive it. Take advantage of the crowds that call for it—and the trade that makes the turnover.

THE COCA-COLA COMPANY ATLANTA, GA.



2A

LOOK OUT FOR "COFFEE" BEANS

(*Continued from page 19*)

fee berry," "coffee bean," "new coffee plant," "domestic coffee berry," and "new domestic coffee berry." For many years the soy bean has been used to a slight extent in Europe, especially Switzerland, as a substitute for coffee. In Japan and southern Russia the soy bean is prepared as a coffee substitute and placed on the market. This product is ground very fine and has much the same appearance as coffee.

For those who desire a substitute for coffee as a drink, the dry beans of any variety of soy bean, when properly roasted and prepared, may be used. Prepared as coffee, the soy bean gives a liquid which in color and aroma is similar to coffee, but it has no stimulating effect. Many people fond of cereal drinks think the soy bean coffee fully eqnal to the cereal coffee substitutes.

The use of the jack bean for "near" coffee is not a new thing, and its merit for this purpose is no greater than that of many other beans. For forage, the jack bean is not cqual to the soy bean, velvet bean, or cowpea, and thus far it has not shown that it is of any particular value in American agriculture.

FOOD POISONING

(*Continued from page 22*)

within its containers, or immediately refrigerated.

But a few decades ago the consumer slaughtered his own meat, prepared his own food, or else purchased it from a neighbor—*whose habits he knew.* As the population increased, food resources were pushed farther and farther back. A constant supply of fresh food, or in fact food at all, is becoming more and more linked with its transportation. The recent labor difficulties clearly demonstrated how close is the margin between food and famine, for the American public. Today food traveling to the ultimate consumer frequently originates thousands of miles distant. The consumer now relies on the packer or distributor for the habits of the preparer of his food. Hence, good sanitation is a live issue, and one demanding respect. The ultimate goal, is certified food.

Progressive Town

"I see," remarked a gentleman as he paid a small newsboy for his paper, "that you are putting up a good many new buildings in your town."

"That is the only kind we put up here, sir," replied the little fellow, with a touch of civic pride.—*Judge.*

SAUER'S
PURE FRUIT
FLAVORING EXTRACTS
FOR
PURITY STRENGTH AND FINE FLAVOR
WINNER OF 17 HIGHEST AWARDS AT AMERICAN AND EUROPEAN EXPOSITIONS
LARGEST SELLING BRAND IN THE UNITED STATES
32 FLAVORS AND OLD VIRGINIA FRUITTI-PUNCH
The C. F. SAUER Co
RICHMOND, VA.

When cakes took hours to prepare

THE woman of today would hold up her hands in horror should a cake recipe casually instruct her to beat the ingredients for two hours! Two hours!—not counting all the getting ready and baking! But this was no uncommon matter in quaint old cookbooks of a century ago.

Baking powder, however, has changed all that. And the latest development in the history of leavening agents is Ryzon, the Perfect Baking Powder. Now light, delicate cakes, quickly prepared, are no longer dependent upon hours of beating. Scientific study and experimenting on the part of experts —and the availability of accurate, reliable ingredients such as Ryzon—are doing wonders in raising the standard of all baking.

Ryzon is packed in full 16 ounce pounds—also 35c and 20c packages. The new Ryzon Baking Book (original price $1.00), containing 250 practical recipes, will be mailed, postpaid upon receipt of 30c in stamps or coin, except in Canada.

RYZON
THE PERFECT BAKING POWDER

GENERAL CHEMICAL CO.
FOOD DEPARTMENT
NEW YORK

The Ryzon level measure

If You Are Interested in Restaurants

whether public or industrial or institutional, by all means subscribe to THE AMERICAN RESTAURANT, a magazine for eating places.

Every type of restaurant is covered by articles written from actual experience.

$2.00 PER YEAR

The American Restaurant
38 So. Dearborn St.
CHICAGO

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

Rumford

THE WHOLESOME
BAKING POWDER

insures whiter, sweeter and lighter cake and bread—it raises the baking just right, and adds to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

RUMFORD CHEMICAL WORKS,
Providence, R. I.

L.71 10.17

At Sleep-Time

Bubble Grains

Millions of happy children, at bedtime, get Puffed Wheat in milk. And think what a dish it is.

Whole wheat with no element omitted. Every food cell blasted, so digestion is easy and complete.

Wheat puffed to bubbles, eight times normal size—thin, flimsy, flaky morsels, like fairy foods.

Never was a whole grain made so enticing, never so fitted to digest. What good-night dish compares with this?

The supreme delights

Puffed Grains hold first place among all cereal dainties. Each is a food confection. The grains are so nut-like that people use them in home candy making—as garnish on ice cream.

Yet two are whole grains, and all are scientific foods invented by Prof. Anderson.

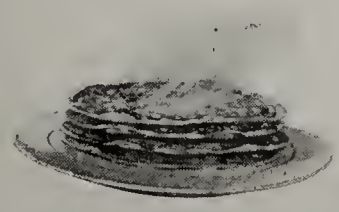
Every food cell is blasted by a steam explosion. Every atom is fitted to digest.

When you have foods so delightful, so hygienic, serve in every way you can. Children revel in them.

Puffed Wheat **Puffed Rice** **Corn Puffs**

Also Puffed Rice Pancake Flour

For Nutty, Fluffy Pancakes



Now we make a pancake flour mixed with ground Puffed Rice. It makes nut-like, fluffy pancakes—the finest ever tasted. The flour is self-raising, so the batter is made in a moment. Try this new dainty. Ask for Puffed Rice Pancake Flour.

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TRUTHS ABOUT YEAST

(*Continued from page 17*)

grain, and that they used to mix the foam from the fermented mash in the dough in order to leaven it.

There are a good many reasons why the use of yeast in bread has not become a lost art. A few years ago you would have been told that yeast is used to raise the bread, but it has an equally important function, namely, that of ripening, softening and conditioning the dough, or rather the gluten, for it is on this constituent of the dough that the action is shown.

In making bread at home it is customary to set the dough the night before and let it rise over night and then knock it down, mold it into loaves and put it in the pan, and let it come up once again before it is put in the oven. A similar practice obtains in the bakery, except that the dough is punched or kneaded several times during the fermentation period. If this were not done and the dough put in pans and allowed to come up once, dark, small, coarse loaves would result. This is because no time has been given for the maturing of the gluten, which is brought about indirectly by the action of the yeast, so that when the well-fermented dough is put in the pan the gluten is soft and elastic. Thus when it comes up for the final time it will produce a light, white and easily digestible loaf.

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The morel may be looked for in April and May, and it is so regular in its appearance each year and sticks to the same spot season after season so faithfully, that once a morel colony is discovered one may always be sure of finding it every year at the right season. Unfortunately the season only lasts for two or three weeks.

The morel is something like a sponge in its general appearance, having a tan-colored round or conical head covered with coarse irregular pits and furrows; the stalk is thick and somewhat lighter in color, and both stalk and head are quite hollow. There are several species, all very much alike and all equally good to eat. They usually range in size from one to three inches high.

When fried in butter or boiled in milk with butter, pepper and salt added, they are delicious, and they may be dried and kept for seasoning soups.

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ORVILLE D. LA DOW, born in Ballston, New York, October 9th, 1852, and died in Washington, April 10th, 1920.

Mr. LaDow was for thirteen years private secretary to the Secretary of Agriculture, Washington, and during the early days of that Department. At the time Mr. LaDow entered the Government service the Department was a Bureau and consisted of 30 employees. After leaving Washington Mr. LaDow was located in New York and spent many years in that city. Of late years he was identified with manufacturers of food products and at the time of his death located in Washington and at the head of a Service Bureau. He helped organize the National Preservers' & Fruit Products' Association and was its Executive Secretary.

Mr. LaDow was sick only about 10 days and died very suddenly. He leaves a wife, son and daughter.

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(Continued from page 25)

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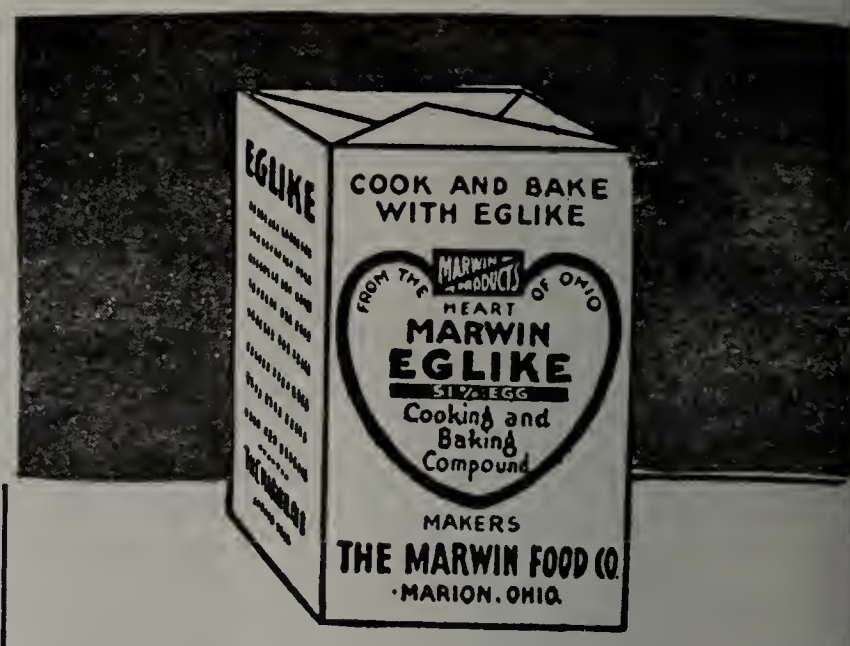

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How To Know Your Flours

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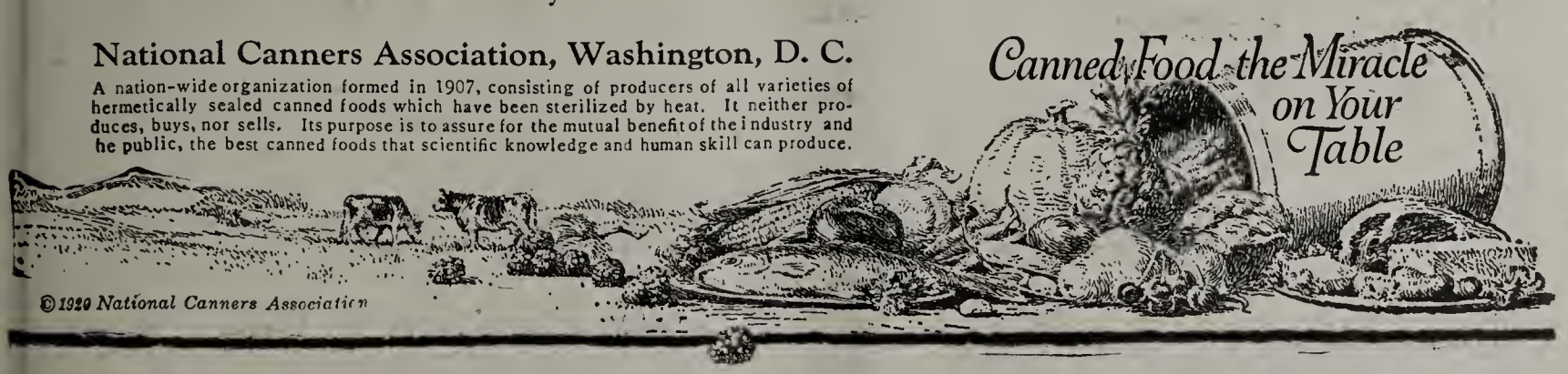

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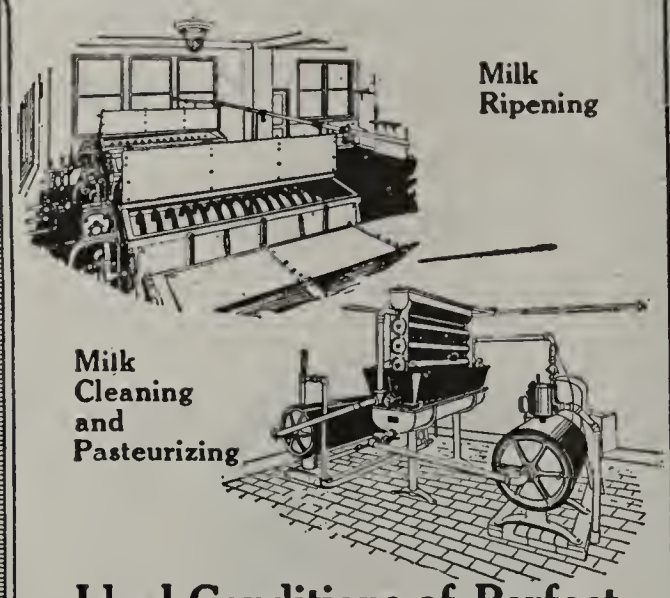

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Swift's Premium Oleomargarine has a rich, just-salty-enough flavor; is a better spread for bread, and splendid for cooking.

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THE AMERICAN FOOD JOURNAL

Vo'. XV CHICAGO, JUNE, 1920 No. 6

How to Know Your Flours

By GEORGE L. TELLER of The Columbus Laboratories, Chicago

THE quality, grade and market value of flour may be known in three ways:

1. By knowing well the kind of wheat from which it was made and the details of its making.

2. By the results given when applied to the purposes for which flours are used.

3. By comparison with other flours of known quality which come in competition with it in the markets.

The miller who uses good wheat, has a good mill and does his work with proper skill should have good flour. When he believes he has all these, he must make himself sure of the facts by putting his products to the test. While "the proof of the pudding is in the eating" the proof of the flour and the cook is the kind of eating we get from them, but here you always have the cook as well as the flour to take into account, and the same flour will often give very different bread and cake in the hands of different cooks. Besides this, it is very difficult to give a just estimate of the flour to the minds of others by simply saying that Mrs. Jones made very excellent bread from it, or Mrs. Smith tried it and did not make a very good bread. We may not know either of the estimable ladies or their cooking ability, or why the one got good results and the other did not.

To arrive at a correct estimation of the value of a flour so that we can give this information to others who may be interested in it, it is necessary to obtain our information in some other way. To put it in comparison, for example, with some flour of known quality, and to make the comparison in such a way that we can easily draw conclusions as to its actual character, grade and worth. The Columbus Laboratories have been making comparative analyses of flours for the past twenty years and have worked out a system of determinations and a method of stating these determinations in such a way as to show very clearly, to one who is familiar with the reports of the analyses, the kind of flour you have and in what respects it is better or poorer than other standard grades of flour which you or your patrons can obtain in the market.

There is no one feature of a flour which will tell you fully its character. It is necessary to know several features of it and put these together to draw definite conclusions as to the kind of flour it really is. The several features which are most valuable in forming an estimate of a flour are the gluten, the ash, the water absorption in the making of the dough, the color, and last, but not least, the kind of bread it will make when baked under such conditions that the results can be accurately compared with those of a flour of known good quality. Knowing these several features, we can judge quite closely the kind of wheat from which the flour was made, the grade of flour, whether patent, straight or clear, and the purpose for which it is best suited. All of these features vary greatly from year to year, depending on the conditions under which the wheat was grown.

During the time in which the writer has been familiar with the composition of flours, he has found samples which ranged in dry gluten from 5 per cent to 20 per cent; ash which has varied from .28 of 1 per cent to 5 per cent, or more, in short patent flours; water absorption which has varied from 50 per cent to 75 per cent and colors which have varied from a dead white to a rich lemon yellow, and in the lower grades to a dark brown. These flours have been capable of making bread or cake of qualities ranging from that which would satisfy the most fastidious taste of an American queen to that which would be an insult to a dog to which it might be offered.

From the earliest time that the American millers can remember, gluten has been found in flours by washing them in water until all of the starch has been washed away. Some have used a method of thoroughly pressing out the water which the elastic, wet gluten contained, weighing the result and calling it "wet gluten." Some have preferred to bake this gluten and dry it at a low heat until all the moisture which it contained is driven out. Then, calling the resulting product "dry gluten." Ordinarily the wet gluten is three times the weight of the dry gluten and this will always be if the water is squeezed out of the wet gluten to just the right extent. The old way of weighing the hog is said to have been to weight the head and multiply the weight by ten this will give the right weight, if you cut the head just right. The wet gluten will give the amount of dry gluten if you press the water out just right. The dry gluten, if obtained in this way, is necessarily impure gluten. The better the grade of flour the purer the gluten will be; the poorer the grade, the more impurities are present.

At the Columbus Laboratories we prefer to determine the total protein in the flour by an accurate chemical method and, since the

greater part of the protein is gluten, we call the result "gluten," just in the same way as when it is washed by hand. We find that when the work is properly done in both cases, the results of the two methods of determining the gluten agree as closely as it is possible to get duplicate determinations by either one of the methods. It is true that in the lower grades of flour there are more proteins which are not gluten, than in the short patents, but the relation between the hand-washed and the chemically determined gluten hold equally well with nearly all flours because there are more impurities in the lower grades in both cases.

ASH: Much stress is coming to be laid upon the amounts of ash in flours by both millers and bakers. It is a valuable means of judging the grade of the flour when taken in connection with other determinations. If taken alone it is likely to be very misleading, for the ash in the flour portion of different wheats varies greatly. During some years it varies more than during others. If we know well the type of wheat and know the average amount of ash in a patent or a straight or a clear grade of flour from that type of wheat, we can, with considerable certainty, judge that another flour from the same type of wheat, which has an ash that belongs to one of these different grades, must belong to this grade. But, if we have blends of flours such as soft wheats and hard Winter wheats, or soft wheats and Spring wheats, we can make all kinds of mixtures which will give ash results that mean little, unless we have other means of comparing the flours. For instance, the ash of a soft wheat clear is approximately the same as that of a 100 per cent straight from a hard Winter wheat. Flours of equal bread making qualities and equal market values will often vary greatly in the amounts of ash which they contain.

ABSORPTION: This is the amount of water which is required to make a dough of definite stiffness. Two bake-shops which use the same flour may use very different quantities of water in making a bread-dough from it, depending upon their habits of working and facilities for doing the work. In reporting the absorption of flour, if flour of a known character is taken as a standard, and it is stated in plain terms that a flour of this kind will absorb 60 pounds of water for 100 pounds of flour, and it is shown that another flour has an absorption of 60 pounds of water when made into a dough in the same manner, it follows very clearly that the baker who uses both of these flours in the making of his bread will use the same amount of water for the two flours, whether he is using water at the rate of 54 pounds to the 100 pounds of flour or 62 pounds to the hundred.

LOAVES PER BARREL: The absorption, as expressed in our flour reports, not only shows the comparative amount of water which should be used in making a dough of suitable stiffness for the baker's use, but it also shows a relative number of loaves of bread which a baker can obtain from a barrel of the flours. Because bakers use varying quantities of water in their dough, the yields of bread which they will make from a hundred pounds of flour differs considerably. On an average, year in and year out, the yield of one-pound loaves from a barrel of hard Winter or Spring wheat flour may be taken at 285 loaves. In our reports, when we state that the number of loaves per barrel is 100 per cent as compared with the standard, it means that if the standard flour will give the baker 285 loaves to the barrel, the flour under examination will also give 285 one-pound loaves to the barrel. If it has an absorption of 2 per cent less, or 58 instead of 60, it will make a correspondingly less number of loaves to the barrel which, according to the method of calculation we use, will amount to a difference of 1.2 per cent or it will give 98.8 per cent as many loaves as the flour which we have taken as a standard. Therefore, on an average it will give 281.6 loaves to the barrel. Or, if it had an absorption of 62, it would make a yield of 101.2 per cent, equivalent to 288.4 loaves to the barrel. This same relative difference holds whether the baker is making from the standard type of flour 280, 285, 290 or any other number of loaves.

COLOR: Color has long been a guide as to the grade of flour from whatever wheat it was made, and to one skilled in comparing colors of flours it tells much. However much skill a person may have in judging the color of flours, it is only when he puts in comparison flours of known quality that he can set a just value upon them. The difficulties of judging flour from color have been greatly multiplied with the coming in of the bleaching and maturing processes and the skill of the one who is examining the flour is now called even more into play than formerly. Whatever information a color examination of a flour may give, it does not, by any means, tell all there is to know about a flour or in many instances even its grade or kind, unless taken in connection with other qualities. An examination of flour in the dust is often misleading and a comparative color of two flours in the dust is often found to be distinctly different than when it is made on properly prepared color slides which have been dipped in water and then dried.

QUALITY OF BREAD: Whatever else we may know about flours it is necessary in forming a correct estimation of most of them to have a baking test made and this baking test should be made in connection with a similar baking of a flour of known quality. Then, by careful comparison of the loaves produced, a person skilled in the examination can generally draw same very accurate conclusions concerning the flour. It must be assumed, of course, that the making has been conducted with proper skill and under carefully controlled conditions for, with improper making, it is possible to make very different loaves from the same flour, not only as to volume and texture but color as well. Generally any unsoundness or irregularity in the flour becomes apparent during the making of the bread and, when present, is recorded in a foot note at the bottom of the report.

BREAD VOLUME: This is determined by the results from the comparative baking tests and these tests are so made as to show the volume when working under similar conditions. This shows best the **natural characteristics** of the flour **for bread volume.** Within reasonable limits the volume of bread can be varied at will by adding more or less yeast or otherwise, and when all other things are considered, too much stress should not be put upon slight differences in bread volume. Loaves of bread from the same dough in large bakeries will vary more or less in their volume, even when of the same weight.

FERMENTING PERIOD: This indicates the relative amount of fermentation which should be given a flour to get the best results out of it, and varies considerably with flours from different wheats and with different grades of flour from the same wheat. It depends upon

the amount of gluten in the flour and upon the quality of the gluten present. In general, the more gluten there is in flours of the same grade, the more fermentation is neeessary to get that gluten ready for proper expansion when the loaf is put into the oven. It is the purpose of fermentation to soften the gluten so that it can expand properly during the baking. A elear flour will generally require eonsiderable more fermentation than a patent flour from the same wheat, partly beeause it eontains more gluten and partly beeause the gluten is more resistant to the aetion of fermentation and requires more of this aetion to soften it to the right extent. If a flour of known quality has a fermenting period of 100 per eent as expressed in our report, and another flour, whieh is being eompared with it, has a fermenting period of 110 per cent, it means that to get the same results in the bread it is neeessary to use 10 per eent more yeast if it is to ferment in the same time. If we use the same quantity of yeast it will require 10 per eent more time for the fermentation to take plaee.

QUALITY OF GLUTEN: This is a very diffieult thing to express in definite terms. Some have thought that in washing gluten by hand they could determine something of the quality of gluten in the flour by the elastieity of the gluten washed out. Some glutens are mueh more tenaeious and resistant than others; some are said to be weak and flabby but there is not neeessarily a distinet relation between the baking qualities of the flour and the eharacteristies of the gluten in these partieulars. Whatever the kind of gluten, the flour may make good bread with proper handling of the dough. Small differenees of this kind are more or less vaguc and uneertain. We prefer to take the position that gluten of high quality is eapable of expanding to a greater extent and eonsequently of making a better volume of bread with the same fermentation for the amount of gluten present than a gluten of poorer quality. Taking this view, the quality of gluten expressed in our report is dependent upon the amount of gluten present and the size of the loaf madc when taken in eomparison with the amount of gluten and size of the loaf of bread made from the same amount of another flour taken as a standard. Following out this plan we may say that of two flours eontaining the same amount of gluten make bread of different volumes, that whieh makes the larger loaf must have gluten of better quality than that that whieh makes the small loaf. On the other hand, if two flours eontaining different quantities of gluten, when treated under the same conditions, give bread of the same volume, that flour whieh eontains the least gluten must have gluten of better quality than that which eontains more, else it eould not expand to the same extent.

Having made these several determinations and put the flour in eomparison with another of known quality and of substantially the same grade it is possible to show in figures to what extent the one is better or poorer than the type sample taken as standard. In general the comparison may be made more elosely if a flour of substantially the same type is taken as a standard but it may often be made with equal aeeuraey and clearness if a flour of some other type is taken as standard. Here we must know the value to put upon the relative differences shown. For example, a fair average Spring wheat family patent flour, at the present time, eontains approximately 11 per cent of gluten, .40 per eent of ash, has an absorption of 59 per cent; eolor which is elearly reeognized as belonging to its type and it will make bread of a quality charaeteristie of this grade of flour. A first elear flour from the same wheat will have a gluten of approximately 13 per eent; ash of .80 per eent. and a eolor based upon rational methods of fixing its value of 70 per cent. It will make bread eharacteristic of this type of flour and, aeeording to our methods of judging and marking brcad will at the present market values have a pereentage quality of about 88 per cent of that of the family patent. Flours whieh are intermediate between these two grades will have these several qualities and parts intermediate between these two types of flour and we can express them in correet pereentages in our report. For example, a standard patent from the same type of wheat will have a gluten of approximately 11.2 per eent, an ash of .48 per eent, an absorption of 59 per eent, a eolor of 95 per cent and a quality of bread of 98 per cent. It will have a market value mueh as if it were produced by mixing 80 barrels of a family patent with 20 barrels of a first elear. A flour which in thc report is given figures elosely agreeing with these will therefore have a market and baking value equal to that of a Standard Patent from Spring wheat. The same thing may be said of flours from other types of wheat when put in eomparison with mixtures of patents and clears of their type.

MOISTURE: It is well known that moistures of flours differ greatly, not only at the time they are milled but after they have been milled for greater or less time. A variation of the moisture present will eause some slight variation in the report but, unless flours beeome exeessively dried out, this difference will not be great, and a determination of moisture for general purposes is hardly neeessary. Flours which are sent from the mill in small paekages have a tendeney to dry out to a greater or less extent during transportation. Under sueh conditions a determination of moisture would not aeeurately express the amount of water in the flour which it had in bulk and would be made, other than for some speeial misleading. For this reason, moisture determinations should not be purpose, exeept when the sample is sent in a moisture-tight eontainer.

ACIDITY: All flours show a eertain amount of aeidity, depending generally upon the amount and kind of ash present. If the flour has beeome unsound this aeid may be slightly inereased and the amount of acidity may sometimes show the extent of eertain kinds of unsoundness, but unsoundness generally beeomes so apparent in other ways during the eourse of our analyses that the determination of the aeidity does not add mueh to the information we have. We do not, therefore, inelude aeidity in our reports unless on speeial request or when there are speeial apparent reasons for doing so.

GRANULATION: A great deal has been said about granulation and the influenee it has upon the quality of flours. It is the writer's belief that the value of partieulars eoneerning the granulation of a flour, from a baker's standpoint, is very small. With modern high-speed mixers the granulation is broken down immediately after it is mixed with the water and this is also true, to a large extent, even with handmixing of the dough. Further than this, we have the results of some experiments that show there is no material differenee in thc baking quality of flour, when it is well granulated, as produeed in the best mills, and when the granulation of this same flour is almost eompletely broken down by severe grinding.

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The Oleomargarine Laws of the United States

An address delivered before the Interstate Cottonseed Crushers' Association at New Orleans on May 14, 1920, by J. S. ABBOTT, Secretary of the Institute of Independent Margarin Manufacturers

I WISH to thank you heartily for this opportunity to inform you of the reeent formation of the Institute of Independent Margarin Manufacturers. It is the first association of any group of margarin manufacturers in this country. Whether we like it or not, the problems of common interest to those engaged in the same kind of business can be more certainly solved by organized effort than by individual effort. The purposes of the institute are in general the same as the purposes of any other association of manufacturers engaged in the same line of business. They differ however in one fundamental particular from the purposes of that giant organization whose product is in competition with margarin. It appears that the chief purpose of that organization is to kill outright the margarin industry, and to kill it, not by clean eompetitive methods pursued in the spirit of clean business but to kill it by vicious prohibitory laws, and other trieks of commercial knavery, such as the boycott, false doctrines of eeonomics, and misrepresentation of the facts of nutrition. The margarin industry, your industry, and other allied industries, have been long suffering, patient and tolerant of a few hopelessly envious souls who have made their living by spreading sueh false and fraudulent doctrines. We have all been optimistic however in the faith that our people would some day demand that these long and aggravated injustices be dethroned. The Reformation was put down twenty times before Martin Luther. Christ was crueified and Socrates was murdered by judicial decree. But today wc have Christianity and philosophy. Some day the present oleomargarine laws will give way to sane and efficient laws for the regulation and control of the margarin industry in harmony with the prineiples that have been adopted for the control of other food industries.

"The federal olcomargarine law," said the United States Supreme Court, "is on its face a revenue measure." Why did not this court say, "It is a revenue measure?" For the same reason that they would not say a wolf in sheep's clothing is a sheep. It is true a little revenue is derived from this source. But no modern civilized country in the world has ever pursued the policy of raising revenue by levying excise taxes on useful and necessary consumable commodities except in times of war. It is true that such a tax was levied on salt in the countries of Rome. England at one time levied excise taxes on salt, candles, leather and soap. Holland levied taxes on flour, meal, bread and meats. But no country has ever levied an excise tax on any consumable commodity that was in competition with any other commodity. The present law is not a revenue measure in fact. Revenue is not its purpose. Regulation and control of the margarin industry was not its purpose. Its purpose was to kill the margarin industry. It is a prohibitory law. The prohibition by many states and the restriction by the United States of the use of color in margarin to give it an appetizing appearance, and the heavy occupation taxes on margarin dealers, especially retail dealers prohibit a greater consumption of margarin. Hence the only difference between these laws and outright prohibition laws is one of degree. If such a law be in harmony with good governmental policy, our legislative bodies could just as well levy an excise tax on lard eompounds to protect lard; on beef to protect bacon; on cotton goods to proteet silk and wool; on corn to protect wheat and so on ad infinitum, and throw the country into civil war.

Do you know what agencies have developed this industry thereby extending the markets for your produets? Has a dollar ever been spent by any state or federal agency in researches for the perfection of margarins in which the fats and oils of our farms and mills are combined for food? Have any of our colleges carried on such investigations? Are our Bureaus of Markets attempting to find a market for these products? Do you ever see margarin price quotations? Yet peanut oil, cotton-seed oil, cocoanut oil, beef fats and milk which enter into the eomposition of margarin are products of agriculture. Millions of dollars have been spent by state and federal agencies in researches looking to the perfection of the manufacture, storage, transportation and marketing of butter. Yet margarin and butter are both products of our soil and of our factories. Without the assistance of a single governmental agency, state or federal, a few strong willed and courageous spirits have spent their own money in researches with uncertain returns and have succeeded in the production of many forms of wholesale foodstuffs which are found on the tables of thousands of our people who are able to buy whatever they want to eat. Only a few years ago there was only one pound of margarin to ten pounds of butter consumed in the United States. Today there is consumed here one pound of margarin to every two and one-half pounds of butter. This fact is gall to our competitors.

When will the American people get relief from this class legislation? When every man who eares anything about economy, every time he pays a dollar for a pound of butter, thanks the margarin industry that he does not have to pay two; when every man who buys a pound of margarin for 50 eents thanks the margarin industry that he gets as much and as good food value for his money as if he had spent one dollar for butter; when our people everywhere appreciate the fact that the crime of these laws is not so much in the hardships and expenses which they impose on manufacturers and merchants as in the destruction of a fundamental right of an American citizen to purchase in a free and open market any necessary consumable commodity of his choice manufactured in a form suitable to his tastes; when the prohibitory features and unjust provisions of these laws are properly presented to our legislators by those interested in every phase of the margarin industry from the ground to the consumer; when a real regulatory

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Broadening the Housewife's Viewpoint With Constructive Information Through Official Channels

By CLAUDIA QUIGLEY MURPHY

WHY face the future with your back to it? Why gaze at the lengthening shadows of the past, however fascinating they may be, when by turning rightabout, we confront the future with which we must deal and, at the same time, see more clearly the present in which we now live? For we can see conditions that must control, and the basic facts on which plans for today and tomorrow must be built.

Conversation is useful when it carries practical information from which better ways and means of living can be devised. But finding fault and criticising and striking and refusing progress will not get any of us anywhere, nor serve any useful purpose.

And now to facts—for getting down to facts is an essential industry today. It makes for increased production in our industries by removing the barriers of prejudice; by creating more healthful trust in conditions that confront us by transforming our ignorance into intelligence.

And there has been no more constructive movement in this country in all the centuries than the education of our women to a clearer understanding of the origin and the distribution of our foodstuffs and a better utilization of them in cooking and serving, for we are a family that live together. There must be supply to meet the demand. There must be intelligent demand to consume the supply.

All this work has been done quietly and efficiently, under the name of Domestic Science, or the teaching of Cookery, which has grown from the instruction of a mere handful of women and men, in the latter part of the nineteenth century, to a splendidly organized force in our twentieth century that reaches from coast to coast and from the gulf to the Great Lakes.

On the one side we have our splendidly organized commercial group of grocers and jobbers, of producers and packers. And the grocers' trade has most efficiently served our people. They have educated us in many ways; have given us a much wider range of foodstuffs than we have ever had before.

On the other side, the housewife receives information as to cookery and utilization of these food stuffs from three sources—the domestic science teacher, the demonstrator. the manufacturer and the grocery store. To this may be added a fourth, and that is advertising.

So then, we have two splendidly organized groups, each functioning their own way, each serving a very definite purpose. They are like two wheels to a vehicle, in which rides the housewife of today. These two wheels, one representing the grocer, the other representing the teacher, must travel in harmony, else progress will be blocked. They must go at the same rate of speed, pursue the same route, lest the vehicle be split asunder.

In order to get some basic facts on which a better route of progress could be outlined, a survey has been made among teachers of cookery in this country, to ascertain just what they thought of present methods used by the commercial group in sending literature to schools and colleges concerning their products. This is the question form used:

What do you think of special weeks for featuring foods, such as Raisin Week? New Coffee Week? Does this promote wise or unwise buying? .....
.....

In your opinion do Grocery Store demonstrations help women to better information as to specialized products? .....
.....

From whom do you learn about new foods—the grocery man or the woman demonstrator in the shop?
.....

Would you think the above demonstration could be given less expensively by other methods?....
.....

Have you ever purchased as a result of the demonstration?

Do other women purchase?.....
.....

What of house-to-house demonstration? Do they help to wiser buying? .....
.....

Do you find that the so-called "Educational Expert" from a business house is an aid in teaching your students? .....
.....

Signed by.....
School .....
City..... State.....

This questionnaire was sent only to the heads of schools and colleges teaching cookery, of which there are 289 colleges and 154 normal schools in this country. Over 140 replies were received and they are exceedingly interesting as well as quite enlightening.

For example, to the question "Do Grocery Demonstrations Help," 50% in the New England States state "yes," and 50% in the Middle Western States state "no." In the Northwestern States 50% state grocery store demonstrations do not help, and in the Southwestern States 90% state they do help. So also in the Pacific Coast States, while in the North Atlantic States they split 40 to 60 against grocery store demonstrations. The South Atlantic States and the Southern Middle States are strong for grocery store demonstrations. Right here is very evident inference that some small adjustment is necessary to remove friction when it exists and increase efficiency. We all have to adjust our carburetors. Why not our methods?

To the question of "From Whom Do You Learn of New Foods?" the majority reported that they learn from the grocer; next from the woman demonstrator in the grocery, and finally from advertising.

The analysis of this subject is most inspiring and full of valuable suggestions. The appreciation of advertising most evident. The appreciation of demonstrators indicates that the right methods are used, and the grocer's efforts most helpful, but subject to improvement, of course.

There was quite a difference of opinion on "Special Food Weeks." In the Middle Western States it is evenly balanced for and against. In the North Western States there is strong disapproval. In the South Western States the majority for special food weeks is large. In the South there is great interest in special food weeks and an indication that they are seriously observed. On the whole, however, most were of the opinion that special weeks could profitably be extended to staple as well as special foods.

There is disapproval of educational experts sent out to colleges, the vote against them being 75 per cent. And the reasons given are most interesting—that the demonstrator is not always properly prepared to go to colleges and carry on a technical conversation concerning the product she represents; that her vision is limited and her views narrow; that she too obviously pushes sales; that she is somewhat critical of rival products and unwise statements are made. All these things can easily be eliminated by better training and more careful supervision.

Whether we approve of her or not, the teacher of cookery and of better housekeeping methods is with us, supported by Federal and supplemented by State aid.

The subject matter which these teachers use goes to them through the Agricultural Colleges of the State, from the Department of Home Economics. That this splendid group of women and men can be used constructively is without question. They are in close touch with housekeepers and homemakers, know their tastes and their problems, know too, causes that produce or retard sales.

Subject matter must be prepared in terms suitable for the group to which it is addressed—and all groups cannot successfully be addressed in the same terms. For example:

Group A. Is technically trained in chemistry and nutrition.

Group B. Has had training in demonstration work and deals with adult women in homes.

Group C. Has had some chemistry, a bit of demonstration work, and deals with young women.

Group D. Comes from a vocational school and works along these lines.

There is no universal language. The work of preparing suitable plans is well worth studying with care and attention. To ignore it is folly. To include this field is the part of wisdom, for it definitely and constructively builds more than sales—it builds Good-will.

The Nation's Food

THE NATION'S FOOD, by Raymond Pearl, Ph.D., Sc.D., Professor of Biometry and Vital Statistics, School of Hygiene and Public Health, Johns Hopkins University, is a statistical study of a physiological and social problem. Dr. Pearl was formerly chief of the statistical division of the United States Food Administration and the book is eulogistically dedicated to Herbert Clark Hoover.

The book is really an outcome of the author's work as Chief of the Statistical Division of the U. S. Food Administration during the war. As he elucidates the matter of the book's inception in a brief preface it is perhaps better to give extracts therefrom as to the why and wherefore of the material contained and the reason for its assembly:

"As time passed and the organization of the food producing and distributing agencies of the country was perfected, we came to possess unique sources of information from which questions such as: 'What is our normal consumption of milk?' and 'How much wheat can we spare for export?' could be answered. Still more broadly it was perceived that we had better material than had ever been available before on which to attempt a thorough and statistical survey of the food resources and food consumption of the United States. In the summer of 1918 I began the task of putting together the material.

"No attempt has been made to discuss the related literature. The omission is deliberate. For the United States certainly a statistical analysis of the sort here attempted is pioneer work. In my opinion what is most wanted is a careful, critical, clear and unbiased presentation of the statistical data, rather than my opinion as to their interpretation. The data comprised in this book have interest and significance, it is believed, for a wide range of specialists, including certainly the student of agricultural problems, of nutritional physiology, of economics, of sociology, and of commerce. The point of view of the writer has been to act as the hod carrier to these various specialists, delivering to them a mass of carefully made bricks, believed to be solid and true. From these bricks they can build whatever structures they like, far better than the statistical hodsman could hope to."

The author makes an analytical survey of the food resources of the United States, handling such questions as "How much protein, fat and carbohydrate is annually produced in the United States in forms used, or usable, as human food?" "How much of these basic nutrients in forms available for human food are imported and exported each year?" "What quantities of basic nutrients are annually consumed as human food?" "What is the distribution of the nutrients produced, imported, exported and consumed, among the several classes of food commodities?" "What proportion of the total nutrient material produced in the United States is consumed by domestic animals?"

SUGAR SHORTAGE TEMPTS UNSCRUPULOUS DEALERS

The present shortage in the sugar market has tempted scores of unscrupulous manufacturers throughout the state to substitute saccharin for sweetening soft drinks, ice cream and pastries. As a result, Director James Foust of the Division of Foods, Pennsylvania Department of Agriculture has instructed all field agents to be unusually vigilant for this class of offenders.

Saccharin is more than 500 times sweeter than sugar and costs only a fraction as much as sugar. It is without food value, however, and has a decided harmful effect on the human body. During the past month or two, scores of arrests have been ordered by the bureau and half a hundred arrests of dealers scattered throughout the commonwealth are now pending and will be ordered within a few days.

The Royal Baking Powder Company Versus the Montana State Board of Health

THERE has recently been handed down a decision, by Judge George M. Bourquin of the United States for the District of Montana, in the case of the Royal Baking Powder Company vs. the Montana State Board of Health.

This case was brought about by the sending out of letters to the Montana grocers by the Department of Health of the State of Montana, under date of February 28. A copy of this letter is given below.

"Notice to Montana grocers, wholesale and retail:

"The phosphate baking powder which the Royal Baking Powder Company of New Jersey proposes to sell under a so-called 'new label,' to be known as Dr. Price's Cream Baking Powder, under which name a cream of tartar baking powder has been sold for nearly sixty years, is in the opinion of this department a misbranded article of food within the meaning of the Montana Food and Drug Act, and as such the sale of the article in Montana will be contested by this department.

"H. M. Shea, Director Division of Food and Drugs."

A temporary injunction preventing the State Board of Health of Montana from interfering with the sale of Dr. Price's "Cream" Baking Powder was granted the Royal Baking Powder Company, pending a hearing. The hearing was held before Judge Bourquin on March 22, at Great Falls. This opinion was issued May 12. A copy of the decision follows:

UNITED STATES DISTRICT COURT, MONTANA

Royal Baking Powder Co.
vs. No. 153
Donohue, et al. Decision

This is a suit to restrain officers of this state from enforcement of the Food and Drugs laws of the state, against complainant, the allegations, virtually admitted, being that said officers intend to prevent sale of complainant's "Dr. Price's Cream Baking Powder" so labelled, upon the ground that the said label is misbranding within said laws. From the evidence it appears that for nearly 60 years Dr. Price and various successors including complainant, the present one, had manufactured and sold a baking powder in which the acid ingredient was cream of tartar and also in later years in part tartaric acid. Upon the cans was a label "Dr. Price's Cream Baking Powder, Perfectly Made," below the word "Cream" appearing a cornucopia of grapes, and the back of the label bearing recipes and a statement of ingredients.

In advertising and otherwise the superiority of baking powder containing tartars from grapes as the acid ingredient, over those containing phosphate or alum as the acid ingredient, was diligently impressed upon the public. In 1919 complainant abandoned the use of tartars in this brand but not in others it owns, substituting phosphate. Thereupon it reduced the price nearly 50%, and also advertised the fact of price reduction, relying therein on the name and years ensuring quality and dependability, but saying nothing in reference to the aforesaid substitution save in letters and advertising addressed to the trade, until about two weeks before the bill herein was filed and subsequent to the beginning of the acts of defendants herein complained of.

Complainant made changes in its label as follows: the word "Cream" is now enclosed in quotation marks, directly beneath it is inserted the trade mark notice which is at the bottom of the old label, the contents of the cornucopia are changed to flowers said to be golden rod, "A Pure Phosphate Powder" is substituted for "Perfectly Made," and on the back of the label the statement of ingredients is properly changed. In all else—size, general design coloring, the labels are alike. From a distance sufficient to obscure smaller letters, no difference would be apparent.

In view thereof, defendants, the State Board of Health and Director created by the state law aforesaid to administer the law, determined the label as changed constituted misbranding within said law, and accordingly propose to act thereon, to prevent and punish its use, as the law provides.

Without extensively reviewing the evidence, or the very elaborate briefs and arguments, which range unduly wide, it is believed the defendants in administration of the state law are so far proceeding legally that they are not subject to injunction herein. The Federal Food and Drugs Act does not prohibit a like act by the state in respect to intrastate transactions.

Wrigle vs. Co. 248 U. S. 285

Corn Products vs. Eddy, 249 U. S. 427.

The state law valid, and defendants by it charged with the duty of administering it, they constitute a special tribunal whose decisions upon questions of fact are final everywhere, if supported by substantial evidence, a well-settled principal applicable here.

See Houston vs. Co. 249 U.S. 484.

Broughton vs. Co. 249 U. S. 499.

Whether there is such evidence is the only issue here, is the entire case. The trade mark feature of the label is immaterial.

See Brougham vs. Co. *supra.*

The state law is in terms like unto the Federal and other state laws. It prohibits and penalizes misbranding, that is, labels bearing "any statement, design or device regarding such article, or the ingredients or substances contained therein which shall be false or misleading in any particular," or if labelled "so as to deceive or mislead the purchaser." It lays no command on the purchaser to scrupulously or at all read labels. Not alone in words must the label be not misleading, but also must not be "misleading in any particular" in any part. Keeping in mind the purposes of this and like laws (to secure purity and to advise purchasers what they are buying), the court can not say that there is not substantial evidence to support defendant's determination that complainant's label is misleading and will deceive or mislead purchasers within the intent of the law. Rather, there is such evidence.

Purchasers have learned to rely upon complainant's label as signifying a cream of tartar baking powder. They are habited to its general appearance and accept it with-

out eonsciously or at all reading the larger letters to say nothing of the smaller. The changes made by complainant may well escape the observation of a large part of the habitual purchasers and thc understanding of the larger part. Only to the more curious, careful and learned would thesc changes impart information that the powdcr is no longer the approved tartars derived from grapes but is now the discredited phosphates derived from bones or stones. Vendors are not permitted to entrap the ordinary careless and ignorant.

See Hebe Co. vs. Shaw, 248 U. S. 303.

Houston vs. Co. 249 U. S. 487.

The principal to some extent runs through the law of contracts and is not peculiar here.

The word "Cream" is not arbitrary, meaningless, distinctive, though in time it might bceome such, or might be used if sufficient additions or changes deprive it, in the judgment of defendants, of its misleading quality now as used.

See U. S. vs. Barrels, 241 U. S. 289.

Brougham case, *supra*.

Whethcr this labcl is a misbranding, is committed by the law to defendants, and in the circumstances their judgment is final and not to be rcviewed and set aside by any court. The intent of complainant is immaterial. Its belief is immaterial. The only material matter is its actual failure to measure up to the requirements of the law, in defendant's judgment, in the matter of the label.

Decrec for defendant's.

BOURQIN, J.

May 12, 1920.

Since above decision, The Royal Baking Powder Company asked a further temporary injunction against Montana State Board of Health pending an appeal and hearing before the circuit court of appeals at San Francisco. This injunction was denied.

Ban on Ripe Olives Lifted

RIPE olives have bcen restored to favor. It is again safe to eat them, according to government expcrts. The appetizing delicacy which, by rcason of a few instances of imperfect packing, was brought into temporary disfavor all over the United States, has bcen officially restored to its place at the table and epicures may breathe a sigh of satisfaetion. Incidentally, the bacillus botulinus, that tiny organism responsiblc for the ripe olive's undeserved loss of popularity, has been utterly routed and destroyed, and henceforth must seek other fields.

Seeretary Meredith, of the Department of Agrieulture, in making public the result of a thorough investigation by government chemists of cases of poisoning due to thc eating of ripe olives, *said the trouble was not due to the container* in which they were packed, but to isolated cascs of inadequate sterilization. *The chemists found, he said, that it was possible to sterilize completely both glass jars and tin cans.* To eliminate all possible future trouble, he said, the packers have adopted the department's recommendation that the olives be subjected to not less than 240 degrees of heat to prevent thc possibility of danger to the consumer. This increased sterilization, it is said, in no way affects the flavor or edibility of the relish.

Owing to prejudice, duc to thc publicity given case of poisoning from eating ripe olives, according to the packers, thc ripe olive packing industry has been practically destroyed, the demand having fallen off 95 per cent. So widespread was this prejudice that the consumption of green olives was similarly reduced, although no fatalities were traced to the usc of them. It is believed that the action of the Department of Agriculture in discovering that the cause of poisoning was not due to either tin cans or glass jars, and in uniting the packers in a co-operative movement to standardize their products by absolutely safe methods of sterilization will restore the olive industry to its former position in American trade.

"The Bureau of Chemistry of the Department of Agriculturc," says Sceretary Meredith, "authorizes the statement that it has met with a gratifying dcgrce of co-operation on the part of packers of ripe olives in improving methods to such an extent that danger from botulinus poisoning in future packs will be eliminated. Five groups of deaths traeed to poison produced by thc organism known as Bacillus botulinus have occurred in New York City, Detroit, Mich., Canton, O., Memphis, Tcnn., and Kalispell, Mont. All of thcse cases wcre due to thc consumption of ripc olives. No fatalities have been traced to green olives.

"Very extensive investigations have becn made by scientists from the Bureau of Chemistry with the co-operation of the packers and the packers have also employed specialists to study the causes of botulinus poisoning and the precautions which should be employed to prevent further difficulty. The experts agree that the trouble is not inherent in the type of eontainer used. Whether the olivcs be packed in glass jars or in tin cans thcy may be rendered absolutely safe if proper precautions are takcn to prevent the infection with bacteria during handling and if the packages, when filled, are sterilized at a sufficient temperature and for a sufficient period of time. It is entirely practicable, say the specialists, to sterilizc both containers of glass and tin cans at a temperature high enough to insure absolute sterilization.

"Unfortunately some packs of ripe olives put up in glass as well as some in tin during the past seasons wcre not prepared with all the precautions now known to be essential and were not sterilized at a sufficiently high temperature and some of these goods were responsible for the fatalities. It is probable that of all the ripe olives on the market but an extremely small number actually contained Bacillus botulinus. Of more than 2,000 individual packages collected and examined in the Bureau of Chemistry but eight were found to contain botulinus and seven of these were from the output of one manufacturer and from one batch of his output. In addition to these eight, the Bureau of Chemistry has examincd samples of some of the olives rcsponsible for the fatalities and has also found Baeillus botulinus in these specimens.

"Since there is a possibility of danger from any ripe olive which has been insufficiently sterilized the Bureau of Chemistry has suggested to thc industry that all ripe olives in glass or in tin whcrever located be carefully inspected and that any which show thc slightest degrce of decomposition be destroyed. It has

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Decisions on Food Colors

Dyes That Are Harmful or That Conceal Damage or Inferiority Prohibited in Food

USE only certified coal-tar colors, or vegetable colors known to be harmless, is the advisc of the specialists of the Bureau of Chemistry, United States Department of Agriculture, to manufacturers of foods in which artificial color is used. The use of dyes that are harmful to health or of any dyes when their use conceals damage or inferiority is prohibitcd by the terms of the Federal Food and Drugs Act in foods coming within its jurisdiction. Prosecution or seizure will be made, say the officials, in all cases found where dyes are used in foods in violation of the law.

The only coal-tar dyes that may be certified for use in foods are those known as "permitted" dyes. "Permitted" dyes are those which have been determined to be harmless by the Burcau of Chemistry, and arc therefore permitted to be used after they have bcen certified. Each batch of the "permitted" dyes must be certified before it may bc used to color foods. In order to certify the coal-tar colors the manufacturer of the dye files a certificate with the Bureau of Chemistry to the effect that the dyes to be certified are composed only of "permitted" dyes containing no impurities or ingredients harmful to hcalth. A sample from each batch so certified is submitted with the manufacturer's certificatc to the Bureau of Chemistry. If thc sample upon examination is found to be as represented a lot number is assigned and the manufacturer is permitted to use the lot number and designate each package of the batch certified as "Part of Certified Lot Number ——," or as "Made from Certified Lots Number —— and Number ——" if a mixture of certified dyes have been made. To be certified cach of the permitted dyes must be free from coloring matter other than the one specified and must not contain any contamination due to imperfect or incomplete manufacture.

Dyes Mixed with Other Substances.—Mixtures containing one or more of the permitted dyes with harmless dilutents not dyes, such as salt or watcr, may be certified if the packages in which they are sold are labelled showing the percentage of coloring matter they contain. Since objectionable substances might be used in making such mixtures, every batch of the finished product is certified as a separate unit and assigned an individual lot number. Mixtures of dyes and other substances, which have been certified as a batch, carry on the label an individual batch numbcr, and a statement showing what percentage of the mixture is composcd of dyes. Since the substances not dyes in the mixture are usually cheap, there is a considerable trade advantage in knowing what percentage of the mixture is composed of dyes.

Certificate Insures Harmless Dyes.—Whethcr buying straight dyes, or a mixture of straight dyes, or a mixture of dyes with other substances, there is an advantage to the food manufacturer who uses coal-tar dyes in buying packages containing batches which have been certified, aside from the fact that if he uses uncertified dyes or mixtures he is liable to the penalties under the Federal Food and Drugs Act. Furthermore, uncertified coal-tar dyes are likely to contain arsenic and other poisonous material. Such dyes may render foods in which they are used injurious to health, and, therefore, adulterated under the law.

Vegetable Colors Not Certified.—Vegetable colors are not certified, though harmless vegetable colors are permitted in foods if they do not conceal damage or inferiority. The food manufacturer must, therefore, determine for himself in each instance whether or not the vegetable colors he uses in foods coming within the jurisdiction of the Federal Food and Drugs Act contain ingredients harmful to health.

Label Artificial Color.—Foods which are artificially colored should carry a statement to that effect on the label, except in the case of butter and cheese in which harmless coloring matter is specifically permitted by Act of Congress. It is not customary to require a statement of artificial color in some kinds of candy where the use of coloring matter is so obvious that a declaration on the label would bc superfluous. However, it is a good rule for the manufacturer to follow to always declare on the label artificial color, if it is used. If the coloring matter used in any food is harmful to health, or if it conceals damage or inferiority, it renders that food adulterated within the meaning of the Food and Drugs Act whether or not the use of coloring matter is stated on the label.

Decisions on Dyes.—The "permitted" dyes which may be used in foods after they have been certified properly include the following numbers as listed in A. G. Green's Edition of the Schultz-Julius Systematic Survey of the Organic Coloring Matters, published in 1904: red shades, 107, 56, and 517; orange shade, 85; yellow shades, 4 and 94; green shade, 435, and blue shade, 692. Combinations of these numbers to make any shade desired may be used.

The following decisions and opinions issued from time to time under the Food and Drugs Act are of interest to manufacturers of food who use artificial color: F. I. D. 51, Coloring of butter and cheese; F. I. D. 76, Dyes, Chemicals, and Preservatives in foods; F. I. D.'s 92, 102, 148 and 149 relate to prohibiting the use of copper salts in the greening of foods; F. I. D. 177 regarding the use of certified colors; F. I. D.'s 164, 175 and 180 list the names and numbers of the coal-tar dyes that may be certified for use in foods, 180 being the latest list and including all that are at present permitted to be certified and used in foods; (see PURE PRODUCTS, Vol. XV., No. 8). Item 27 is in regard to imported macaroni containing an uncertified dye; item 21 treats of color in caviar; item 97, color in smoked fish; item 116, color in coffee; item 129, color in alimentary paste.

OLEOMARGARINE LAWS

(*Continued from page 10*)

measure is offered as a substitute for such laws—a measure that is framed on the modern and fundamental principles of food control recognized in all civilized countries; when all groups and associations of men and women interested in all phases of this problem, economic and social, form themselves into a trained army ready to stand up face to face, eye to eye, toe to toe and beat into a pulp any weak-willed and cowardly spirits who are willing to kill the competitive industries of their countrymen by crafty and subtle legislation, rather than by the good old fashioned and honorable method of clean business ability.

A Pink Yeast Causing Spoilage in Oysters

United States Department of Agriculture

By ALBERT C. HUNTER

AT certain periods during the last few years the oyster growers of New England have had difficulty in shipping oysters for long distances without the development of a pink color in the liquor or on the oyster itself. Analyses of shipments showing this color have demonstrated the cause. The organism produeing the pink pigment is a yeast-like fungus which grows readily at low temperature, and produces pigment bright enough to be noticed only when the shipment has been in transit three or four days. Oysters whieh appear to be in good eondition when shipped are often found to be pink when they reach their destination.

The investigation here reported was undertaken to determine the distribution of this "pink yeast," and to find a suitable method of eontrolling or preventing its development. Later, the work was extended to cover a more detailed study of the organism itself, including its morphology, physiology, and biochemistry.

While much coneerning the pink yeast and its relation to the oyster industry remains to be studied, the data given may help to a better understanding of the eause of the color, the distribution of the organism, its control, and some of its physieal and chemical properties.

Although frequent mention has been made in various trade journals of the occurrenec of the pink color in oysters, no detail study of the relation of the pink yeast to the oyster industry has been published thus far. Bates and Round have submitted to the Bureau of Chemistry a preliminary report on the oceurrence of a pink yeast in oysters during the fall of 1914. Based upon their report, a statement was made in the Report of the Chemist that "It was discovered that a yeast was the probable cause of the reddening which affeeted thousands of gallons of oysters during the past season."

From the foregoing paragraphs it is evident that these pink yeasts are widely distributed in nature. Owing to a lack of adequate deseription of these forms, no attempt has been made to identify the organism reported here with any of the forms mentioned other than that they all belong to the same large group of Torulæ.

Distribution of the Pink Yeast

After the cause of the color had been found to be a pink yeast the next thing undertaken was a study of the distribution of the organism in the oyster house, in oysters, in surfaee and deep water samples from Narragansett Bay, and in mud samples taken from the oyster beds. If the distribution was limited to the house, the solution of the problem was simple, eonsisting merely of finding some suitable method of removing the infeetion from everything with whieh the oysters came in contaet. If, on the other hand, the habitat of the yeast extended to the water and mud on the oyster grounds, the problem beeame more eomplex, with less prospeet of eliminating the trouble. An examination was first made of the oyster house and of the utensils in and about the house. Later oysters taken from the decks of the boats were examined before they had entered the house and finally numerous samples of water and mud were analyzed for the presence of the yeast.

Culture media. — After several preliminary experiments with special eulture media of various kinds it was decided that satisfaetory results would be obtained with dextrose agar and dextrose broth. These media, upon whieh the yeast grows abundantly, have been used throughout the work. The agar and broth were prepared according to the directions given in the Standard Methods of Water Analysis of the Ameriean Public Health Association. Beef extract, peptone, and pure dextrose were used, and the reaction was adjusted to +0.5 Fuller's scale. One per cent of dextrose has been found sufficient.

In and About the Oyster House

Method of Examination

Large swabs of cotton on wooden rods were made and sterilized and kept in large jars plugged with cotton. A swab was dipped in dextrose broth until thoroughly wet, and then the moistened swab was rubbed lightly over the area under examination. The swab was then returned to the tube of dextrose broth, marked with the neeessary data, and returned to the laboratory. Immediately on arriving at the laboratory the dextrose broth tubes in which the swabs were placed were ineubated at room temperature (21° to 25° C.) for 12 to 24 hours, after which the broth was plated out in the proper dilutions on dextrose agar. The plates were incubated at room temperature for 7 days, being examined daily for the presence of pink colonies. Whenever a pink colony was found it was taken from the plate with a sterile needle and transferred to an agar slant. At the same time a smear was made for microscopic examination. The colonies are very characteristic, both in eolor and in general appearance, and can be recognized without difficulty. A smear made from each suspected colony was examined, however, in order to avoid error in reeording results.

Results

Results show that the pink yeast is widely distributed throughout the oyster house and the adjacent structures, and can be found on the decks of the boats, 73.9 per cent of the locations examined giving positive results. At the oyster house where the investigation was made the oysters are hoisted from the deeks of the boats in tubs, then dumped into deep wooden wheelbarrows and carried baek along the runway to be emptied into the bins within the house. Starting at the bins and the opening benehes, the pink yeast was found to be rather abundantly distributed on the sides and floors of the bins. The bins first examined in 1916 had not been used since the preeeding April, so that the dust from several summer months had accumulated in them. The dust contained large numbers of the yeast. Attention was next direeted to the wheelbarrows in which the oysters are carried, swabbings from the inside of two of

which showed that the pink yeasts are to be found there also. Swabbings made from the tubs in which the oysters are hoisted also showed the presence of the yeasts. Going still further back in the search, an examination of the swabbings made of the decks of the boats showed pink yeasts. Oysters from the decks examined at this time showed no yeasts. In examining the oysters from the decks of the boats, the oyster meats within the shell were analyzed, but the outsides of the oyster shells were examined in the sample taken from the bin within the house. These results show that the oyster house itself and the utensils on the premises are, at least, sources of the infection.

In Oysters

To ascertain whether or not the oysters already contained the yeasts when taken from the waters of the bay, further analyses were made.

Method of Analysis

Visits to the docks were made at the time when the steamers were to arrive, and samples were obtained before the work of unloading had begun. A representative sample of 15 to 20 oysters was taken from the middle of the pile on the deck and transported to the laboratory in a cardboard box. The oysters were scrubbed thoroughly with a stiff brush in warm water and soap. They were then opened aseptically, 3 oysters placed in a sterile jar with their liquor. In opening the oysters the knife was sterilized with flaming alcohol, and the edge of the oyster shell was passed through the flame before opening. The opened oysters in the jar were vigorously shaken 50 times and dilutions made of the liquor. The proper dilutions were plated on dextrose agar and examined as already described.

Later in the course of the work trips were made to the oyster beds, where the samples were taken just as the oysters were brought out of the water, thus avoiding the contact of the oyster with the deck, which was known to be infected. Such samples, placed in cardboard boxes, were kept in a cool place until they could be taken to the laboratory and analyzed. This was usually several hours later, but inasmuch as the analysis was qualitative rather than quantitative, the delay has not affected the results.

Results

The results recorded show that the pink yeasts may also be found in oysters before they have been handled or brought in contact with infected objects. The number of positive results was not as great in the case of the oyster analyses as in the case of analyses made from the house, only 10 oyster samples of the 38 examined, or 26.3 percent, showing the presence of the yeasts. There was also a decided difference in the number of colonies to be found on the plates made from samples from the two sources.

In no case were there more than two colonies of pink yeasts on one plate in the oyster samples, while the plates made from swabbings from the oyster house frequently presented a surface actually dotted with the pink colonies. An attempt to determine whether or not the infection was localized and whether oysters coming from different localities were infected failed. As the table shows, yeasts were recovered from oysters taken from beds 6 and 4, two areas which are widely separated, bed 4 being east of Prudence Island and bed 6 some distance west of the island. No relation between the season of the year and the presence of the yeasts could be found, positive results being obtained in midwinter as well as in midsummer. It is interesting to note that oyster samples taken from the deck of a schooner from Long Island on March 26 before these oysters had ever been in the waters of Narragansett Bay showed the presence of yeasts. It may be concluded from Table 2 that the oysters are infected before they reach the city, but a comparison of the results in Table 2 with those in Table 1 shows that the chance of infection is far greater in the house than down the bay.

In Water

To determine whether or not the pink yeasts were to be found floating in the water of the bay or whether they were in the mud and soil on the bottom, analyses of surface and deep water samples have been made.

Method of Obtaining and Analyzing Samples

The surface water samples were collected in sterilized 14-ounce French tincture bottles in the usual manner. After the sample was collected, the bottle was labeled and set in a cool place, to be carried later to the laboratory. The samples were then plated according to the Standard Methods of Water Analysis on dextrose agar, and the plates incubated and examined as described on page 4.

For collecting deep water samples which has presented more difficulties, a special apparatus, devised and used by the Rhode Island Shellfish Commission in its investigation of the waters of Narragansett Bay, was employed. It consists of a heavy piece of brass, 20 cm. long by 4 cm. wide and 2 cm. thick. About 2 cm. from the top of the piece of brass is a slit. A knife edge fitted to slide over the back of the apparatus will pass over the opening of the slit. On the front of the brass piece are two clasps for holding a special tube made from an ordinary test tube, which is heated in the flame and drawn out to a capillary point at right angles to the body of the tube; the whole tube is then heated to drive out the air and sealed, forming a partial vacuum tube. The body of the tube is held in the clasps on the apparatus, and the capillary point passes through the slit and extends out in back. When ready to take a sample of deep water, the tube is placed in the clasps as described, and the apparatus, suspended from a strong cord, is lowered to the required depth. A heavy lead weight, which is pierced so that it will slide over the cord, is held in the hand until the apparatus is at the necessary depth. The weight is then allowed to slide down the cord. When it reaches the apparatus it strikes the sliding knife edge hard enough to cause the edge to slide down, breaking the capillary point of the tube. The tube will then fill up with water to about two-thirds of its capacity, and may be lifted up without any further water being taken in. In this manner a sample of from 15 to 25 cc. can be secured from any depth. Samples thus obtained were carried in a specially constructed rack to the laboratory. The tops of the tubes were then broken, precautions being taken to avoid contamination, and the samples were analyzed in the same manner as surface water samples.

Results

The analyses of water samples give a much smaller number of positive results than do analyses of the oysters or swabbings from the oyster house. But 2 positive samples of surface water have been found in the 71 samples examined or 2.8 per cent, and but 7 positive samples of deep water in the 194 examined, or 3.6 per cent. The great difference in the number of positive samples obtained from the various sources is apparent when the percentages are compared, 73.9 per cent in the house, 26.3 per cent in oysters, 3.6

per cent in bottom samples, and 2.8 per cent in surface samples. In all the positive cases the number of colonies on the plates was very small in comparison with the number found when examining the oyster house. The water of Narragansett Bay may be considered almost a negligible factor in the contamination of the oysters with the pink yeast. Beds 1 and 7 are widely separated, and extend from above Conimicut Point to the lower part of the bay. Hence in Table 3 it may be noted, as in Table 2, that the positive samples were obtained from areas a great distance apart, and no conclusions can be drawn as to the distribution of the organism in particular localities.

A record of the weather conditions and the temperature of the water has been kept, in the hope that some relation might be found between such conditions and the presence of the yeast, but the very small number of positive results obtained and the fact that these positive results were obtained from localities distant from each other had made such data of no value. It may be said, however, that, as far as can be deduced from the data at hand, there is apparently no relation between the tide, wind, and current and the distribution of the pink yeast in the water.

IN MUD

Method of Collecting and Analyzing Samples

Whenever the bottom was soft and muddy it was a simple matter to obtain the sample. A large dredge was dragged along over such bottom, and then hoisted to the side of the steamer, while a small amount of the material was taken from the dredge by means of a sterile spoon and transferred to a sterile glass jar. When the bottom was hard and sandy, a greater length of chain was let out on the dredge and the speed of the boat was slowed down as much as possible. If the dredge was left down long enough there was no difficulty in securing enough of the sand for analysis. The glass jars containing the samples were placed in the refrigerator on the boat until they could be taken to the laboratory. Samples of mud and sand were analyzed according to the usual methods of soil analysis. A small amount of the material, taken from the jar with a sterile spatula, was thoroughly shaken with 10 cc. of sterile water, and dilutions of this mixture were made. Since the examination was not quantitative, no attempt was made to weigh out or measure known amount of the muddy material. The plate cultures were made as before described, and examined daily.

Results

In no case was the pink yeast recovered from the 20 samples of mud and sand collected. It may be concluded that the soil on the bottom of the bay is not a factor in the contamination of the oysters with the pink yeast.

Experimental Production of Pink Color in Oysters

In order to prove conclusively that the pink yeast is the cause of the pink color in shipments of shucked oysters, several experiments were undertaken to produce the color by the introduction of cultures of the organism into jars of normal oysters.

Two gallons of oysters, obtained in the market, were divided among 9 glass jars. Five cubic centimeter amounts of a pink yeast culture, grown in an oyster broth medium for 4 months, were introduced into 6 of the jars. The remaining 3 jars were held as controls. Two inoculated jars and a control jar were placed in cold storage at 0.5° C., in the refrigerator at from 8° to 10° C., and directly on the ice at about 5° C. These jars were examined daily, the presence or absence of a pink color noted, and the temperature within the jars recorded. At the end of the first week the oysters in the jars on the ice and in the refrigerator were decidedly pink. There was no pink color in the jars of oysters used as controls. At the end of one month the oysters in the cold storage at 0.5° C. were slightly pink, while the control oysters were not pink. The pink yeast was recovered from each jar which showed a pink color. In each jar, however, the oysters were spoiled and very sour by the time they were pink. The oysters used for the experiment were shucked with their own liquor, and were delivered to the laboratory without being washed. They contained a large amount of dirt and many bacteria in the mucus which, without doubt, brought about the rapid spoilage.

In order to produce the pink color in oysters properly washed and shipped the following experiment was carried out. A trip was made to a near-by city and 3 gallons of oysters purchased at the packing house. These oysters had been carefully shucked and washed in a blower, and then placed in new, clean 1-gallon cans. Into each of two 1-gallon cans of oysters were introduced about 25 cc. of a 10-day oyster broth culture of the pink yeast. The third can was left as a control. The cans were closed and packed in a wooden box with cracked ice, and shipped to the laboratory just as they would be shipped to the retailer. These oysters were 5 days in reaching the laboratory, and when they were received they were light pink in color. The control can was normal. All 3 cans were placed in cold storage, and in 2 days the 2 cans were decidedly pink, the control remaining normal. In this experiment also the pink yeast was recovered from the pink oyster liquid.

These experiments, together with the fact that the pink yeast was isolated from every shipment of pink oysters examined, are good evidence that the pink yeast is, without question, the cause of the pink color in shucked oysters. The experiments have also shown that when oysters are pink they are close to the stage of spoilage, as it takes 5 or 6 days for the color to develop at a temperature of about 10° C. When kept at a temperature as low as 0.5° C. about 1 month is required to produce the pink color, in which time the oysters become decidedly stale.

Discussion of Results

In discussing the relation of the pink yeast to the oyster industry it will be well to consider the method of handling the oysters in preparing them for shipment, as practiced in most of the establishments in Rhode Island, where this study was conducted, to note the possibilities of contamination with the pink yeast in the process, and draw some conclusions from the data already collected as to the source of the contamination.

The oysters were caught in large dredges and dumped on the deck of the boat, after which they are shoveled back along the deck to a large pile amidship. The day's catch of oysters is taken to the oyster house and unloaded by shoveling the oysters into wooden tubs in which they are carried back into the house and dumped into bins. The oysters are opened into metal dippers and taken to the washroom to be cleansed and iced for shipment. They are first washed on a skimmer with fresh water from a hose, then put into tubs of salt water for 15 minutes, at the end of which time the salt water is replaced with fresh water, and a piece of ice added. When the

oysters are thoroughly chilled they are washed on a second skimmer with salt water. The oysters, thus washed, are measured into 1-, 2-, or 5-gallon cans, and covered with a tight-fitting tin cover which is not, however, air-tight. These cans, which are cylindrical, are packed in square wooden boxes of the proper size to hold the can, leaving a space in each corner which is filled with cracked ice. The cover of the box is nailed on, and the oysters thus packed are shipped.

As stated elsewhere, oysters packed in this way and sent for long distances are often pink when they reach their destination. The possibilities of contamination in the process of handling just described may now be considered. Disregarding, for the moment, the fact that the oysters may contain the yeasts when taken from the beds, it may be noted that they are immediately brought in contact with the deck of the boat, which is known to be infected. This, then, is one possibility of contaminating the outside shell of the oyster. Later the oysters are placed in tubs, wheelbarrows, and bins which are also known to be infected, presenting further opportunities for contamination. From the time that the oysters are taken from the water until they are opened in the oyster house there is every chance for the outside of the oyster shell to become contaminated with the pink yeast, but practically no chance for the contents of the oyster shell to be contaminated, since the oyster closes its shell and remains tightly closed during the process of handling. On opening the oysters, however, some of the dirt on the outside of the shell is unavoidably transferred to the dipper of opened oysters. Although these oysters are thoroughly washed, small organisms like the pink yeast are not easily washed off, and may be carried along into the shipping cans.

The data collected show that the house, the boats, and the utensils within and about the house are heavily infected with the pink yeast, that no yeasts were found in the mud at the bottom of the bay, and that yeasts were present in a very small number of the water samples. While it is true that some oysters when taken from the water contain small numbers of pink yeast, such oysters are not often found, and it is not probable that this is an important source of infection. The results of this investigation indicate that the source of the trouble lies in and about the oyster house. If measures are taken for preventing contamination there, the trouble from the pink yeast will be eliminated.

The fact that the pink yeast is occasionally found in water samples and on oysters taken from the oyster beds may possibly be explained in the following manner. Every season oysters are brought to the oyster house, where they are culled, and then taken back to the oyster beds. Such oysters are contaminated in the process of handling and no doubt carry back the pink yeast with them to the bay. A further explanation, which seems more probable, is that the shells that are carried down the bay and planted in the summer may be bearers of the pink yeast. After opening the oysters in the oyster house the shells are dumped in a large pile on the adjacent grounds and left there until June or July, when they are taken to the oyster beds and planted in order to give a smooth, clean surface for the oyster spat and also to furnish calcium salts for the growing oyster. These shells are contaminated with the pink yeast after passing through the house, and it is known that the pink yeast grows abundantly in the shells and in the moisture which collects at the bottom of the pile during months in which they lie in the yard. When these shells are taken to the beds it is probable that large numbers of the pink yeasts are carried with them.

As a method of control it is recommended that all the bins, benches, tubs, etc., be scrubbed thoroughly with water and then washed with a 0.04 per cent solution of formaldehyde gas which is equivalent to one part formaldehyde to 2,500 parts of water. Such a solution may be prepared by adding 1 part of commercial formalin to 1,000 parts of water. The washing should be done in the fall, before any oysters are brought to the opening house; and bins, benches, tubs, etc., should also be washed several times during the winter whenever convenient.

Summary

1. The organism causing a pink color in shipped oysters is a yeast-like fungus.

2. This pink yeast was found in large numbers in the oyster house and on the utensils in and about the house. Of the examinations of the house and utensils 73.9 per cent were positive.

3. The yeast was found less frequently in oysters before they were brought to the oyster house. Of the oyster samples analyzed 26.3 per cent were positive.

4. Occasionally the yeast was found in deep and surface water samples from the oyster beds. Three and six-tenths per cent of the deep samples and 2.8 per cent of the surface samples were positive.

5. The yeast was not found in mud samples from the bottom of the bay.

HOW TO KNOW YOUR FLOURS

(Continued from page 9)

OTHER DETERMINATIONS: I know that other determinations are sometimes made in the attempt to place a valuation upon it. I am familiar with all such determinations and have given them careful consideration but in my judgment, in general, they add nothing to the information which we express in our detailed reports as outlined above. In this report we endeavor to include everything that is essential to give a just valuation of a flour and to exclude those things which would burden and confuse the minds of those for whom it is intended.

In this report we have apparently confined our attentions to the bread making qualities of flour while much of the flour consumed is used for other purposes. The explanation of this is that the report outlined above tells the characteristics of the flour and knowing the flour we can, if we are at all familiar with the use of flours for these other purposes, know whether or not that flour is suited for them. Spring wheat flour has for convenience been taken as an example in illustrations given but the same method of reasoning applies to other types of flours and space does not permit too much detail.

We know that this method of analyzing and reporting flours has not been as clearly understood and fully appreciated as it ought to be and yet the large number of our patrons who have received undoubted benefit from these methods during the last 20 years as well as our own knowledge of the subject justifies us in urging a more extended use of these analyses and reports. It is believed by the writer that this method of analyzing and reporting flours represents a real and substantial advance in the science pertaining to the flour industries and it is the purpose of this article to make it better understood and therefore more useful to those by whom the results are to be used.

Enormous Food Waste in Big City

Estimated That $10,000,000 Worth of Food Spoiled or Destroyed

WITH all the protests that are made against the high price of food supplies, and the very difficult problems connected with living, there seems to be a nation-wide neglect of one very practical remedy.

Where neither hoarding nor profiteering is going on, but where there is actual scarcity of the staple articles of diet and the old law of supply and demand is working out as usual, any one can figure out that the best way to reduce expenses is through conservation of materials.

With this in mind, think of the shameful condition in a home where each day one and one-fourth pounds of edible food, including a half-pound of breadstuff, is thrown into the garbage, and yet if New York is to be taken as an example, this is the condition as it is found to exist in the average American family living in a private house and employing one or more servants.

It has also been discovered that the average middle-class apartment house family, while not quite so wasteful, is at the same time far from saving, throwing away daily a fourth-pound of good food, including one-eighth pound of breadstuffs.

Prosperity Fills Garbage Can

Americans have long been known as great food wasters, and the full pail has been a sign of prosperity, the housekeeper having a dread of being rated by her neighbors according to what she couldn't afford to throw into the garbage can. Last year although we were in the war, the bread wasted in New York city alone amounted to the enormous total of 60,000,000 pounds, representing 96,400 bushels of wheat. If such a waste applied to the whole United States—and there is no reason why it should not be, for we Americans are very much the same in our habits the country over—it means a positive destruction of 18,000,000 bushels of wheat for the year.

Apparently it is only in the poorer sections of the large cities that food waste really has been cut down. In the tenement districts of New York it was found that the garbage of 1,000 families gave only five pounds of bread, 8½ pounds of potatoes and four pounds of cereals, or $1.15 worth of edible food. The Street Cleaning Department of New York city demands that there be one can for every four families, but one can is usually enough to hold the garbage of a tenement where 20 families live.

That the poor of our cities have learned the lesson of food conservation is evident in comparing this with the records of the private house district where the Department of Health made its investigation, for in this section it was found that 163 families had 175 full garbage pails waiting for the collector, or more than a full pail apiece, and examination of the contents showed this result:

Bread and rolls	78 lbs.	@ 10c	$7.80
Meat	50 lbs.	@ 16c	9.00
Potatoes	35 lbs.	@ 3c	1.05
Cereals	16 lbs.	@ 10c	1.60
Turnips	7 lbs.	@ 5c	.35
Onions	8 lbs.	@ 5c	.40
Cabbage	8 lbs.	@ 5c	.40
Parsnips	3 lbs.	@ 2c	.06

Remember this is waste for only one day and that it occurs every day, and yet there are little children in the world crying for food and dying of starvation.

Forget War Lessons

The Bureau of Foods and Drugs of the Health Department of New York city has been urging the gospel of the "empty American garbage pail" ever since the war began. It has now gone further and has disclosed, as never before has been done, the fearful waste of some Americans who, if accused of unpatriotic action, would rise in wrath against the accuser. In homes where service flags were displayed the waste tended to be less than in those where no such flag was shown. But why should this be? Whether or not a family has the honor of a service flag they still have a flag of their country floating above, and for that flag, as for no other, they ought to be proud and glad to conserve food to the highest degree.

An incident occurred the other day in New York that is but one example of many, of the thoughtlessness regarding food conservation. A wealthy woman was giving a "simple" tea. At the affair were served five different kinds of cake, all cut in such a way that the next day it would be too dry to use, and there also were four large plates piled high with thimble biscuit, each biscuit having been buttered while hot. There were only 12 people at the tea and not more than 15 of the biscuits were eaten, and very little cake, and yet when the question of food conservation came up, the dainty hostess remarked most seriously: "In every possible way I economize and save food." And the tiny little biscuits remained silently on their plates.

A representative of the Health Department of New York, who has been engaged in the garbage pail investigations, said, in the course of a recent interview:

Servants at Fault

"Undoubtedly the thing that is most needed in many American homes is intelligent education of the servant. Many of them do not understand the situation or realize that there is still a shortage of food, and employers should take them into their confidence and show them that food saving is still important, as it was in war time, and that their cooperation would go far toward saving amounts wasted in the kitchen, which contributes to the high cost of living, thus improving conditions.

"But the servant is not the only one to be educated. The mistress of the homes of the wealthy need to learn a great deal about the efficiency of housekeeping and to realize that it is a crime against the nation for a woman to leave the administration of her culinary department to one whose ability in saving is doubtful. The 'stand in' of the servant with the grocer and butcher is a great evil, for the servant receives a commission on her orders, and the more she wastes the larger the commissions will be. The mistress might better pay the servant a commission on every dollar saved on her bills—it would be a direct method of conserving food.

The last reports that came in from the garbage dumps of New York gave the appalling figures of $15,945,000 worth of food thrown away, a sum sufficient to buy food for a year for a city the size of Memphis, Tenn., and about one-third of this total amount was bread.—New York Evening Post.

The Business Outlook

FINANCIAL experts are now expressing the opinion that the liquidation which has been a feature of security markets for the past six months was merely the forerunner of a like liquidation in the commercial business world. However, no drastic upheaval is looked for, the opinion being that a financial crisis is unlikely.

The recent drop in the price of clothing, shoes and relative commodities is likely to be misleading, fostering the belief that a sharp and definite downward price trend has begun. This reduction has occurred through voluntary action on the part of retailers. They overguessed the buying public when they marked the price of goods beyond the purse of the average individual. As a result, buying, beyond actual necessities, was curtailed to a minimum, particularly wearing apparel. The present lowered prices are merely an unloading expedient on the part of the retailer, it seems.

This price reduction has unsettled primary markets and led to a curtailment on the part of manufacturers of silk, woolen and cotton mills, it is stated.

Naturally, transportation is one of the big factors of the moment, the inability to move goods promptly creating a fictitious shortage.

Labor, by its insistent demands for still higher and yet higher wages, further complicates the situation. It is believed however by many students of business conditions that labor will soon be called upon to accept a reduction in wages or face the alternative of many closed manufacturing plants.

In their monthly review of business conditions, Armour & Co. have the following to say:

"Subnormal distribution, due to excessive congestion in transportation facilities, kept business in a nervous state last month. During the first week a recovery was noticed in general business with an improvement that seemed to have originated in retail buying. That better tone was short-lived, however, and the extremely tight condition of time money and the congested railway situation reacted in such a manner that business transactions were tinged with unsteadiness.

"Another factor that entered largely into the situation was the depletion of retail stocks due to the inability of jobbers to replenish the shelves because of the switchmen's strike, which continued throughout the month. That gave a stimulus to orders with an additional strain on credit. The result of that condition was an increasing hesitancy on the part of bankers to make loans. Financial observers began to understand that the so-called tightness of money was not really a money squeeze but was a credit strain, and that the only safe and sure cure lay in liquidation or deflation.

"Analyzing the situation, leading financiers came to the conclusion that the congestion of credit was due largely to the great volume of business going on in the country, which was being conducted on the highest basis of cost of raw materials and labor that ever was known. That imposed tremendous burdens on banking resources. Banks were called upon for additional credit to carry the hugely swollen inventories, to meet the increasing costs of manufacture and distribution and preparation.

"A factor that made this burden particularly heavy on the banks was the daily shrinkage of capital. This shrinkage as a matter of course produced a higher interest rate and made banks slow to lend even to essential industries at the higher rates, though the amount of money sought was guaranteed by the best sort of collateral.

"The situation rapidly approached a condition which threatened the exhaustion of credit and a scramble for money by industries became urgent. The main reason for the tight credit situation is scarcity of goods coupled with inability to distribute properly the stuff that is produced. Strikes throughout the nation and throughout the world for that matter have seriously interfered both with production and distribution and have increased prices, so that double the amount of money or credit and in some cases more, is needed to perform the same service of production and distribution that was needed previously.

"Reports from the Federal Reserve Banks at both Chicago and New York for the second week of May showed on their face an improved condition, but to be read intelligently these reports must be scanned with knowledge that the position reflected in them was made possible at the expense of higher interest rates which essential industries had to pay to obtain money to carry on their most vital processes.

"In Chicago discounts on commercial paper balanced with more than $4,000,000 of Federal Reserve notes put into circulation left the situation practically unchanged from the previous week. In New York the ratio of reserves increased considerably but the clearing house statements showed a decrease in bank reserves to one of the lowest levels reached during the present year.

"At this time of the year crops should have been marketed and the money used in harvesting should have been returned again to New York banks. Western banks still are borrowing from eastern banks to carry the crops that the railroads cannot move into distribution. To some financiers the situation looks very much like the beginning of forced liquidation in some directions, which would be but the natural sequence of such a financial condition.

"During the latter part of the month, signs began to appear that showed a disposition on the part of retail stores to reduce their stocks and lowers prices. The movement began in the east and within a week had spread to the west coast. This action was taken by some financial authorities to mean that the restriction of credit had begun to have the effect of forcing liquidation.

"Towards the middle of the month, the financial situation began to react upon the packing industry. Producers needing cash hurried their stuff to the market, with the result that the supply of animals was more than adequate to meet the demand. During the first two weeks, demand for dressed products was strong and widespread, but after the second week, the demand in everything except provisions began to ease, with the result that surpluses were accumulated in some sections of the country. Collections dropped from good to fair. This situation was relieved to some degree so far as the packers were concerned through the increased number of Texas grass fed cattle received, which gave cheaper meat as a basis of operations.

"Overshadowing all the factors that reflected upon business, was the accumulation of freight, enormous in the aggregate, which was piled up at large industrial centers and at

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The Passing of Our Fisheries

By F. L. HOMAN

We gave lavishly untold millions of dollars in our feverish haste to prepare for war. We will waste millions in a chimeric enforcement of prohibition, and expend still more in developing highways and aircraft. Then, like a bolt from a clear sky, will come a sudden awakening, and panic-stricken we will spend billions in a mad effort to conserve our food supply.

Of what use will we make of our great inventions, and our great hoard of gold, if our food supply fails? Food is the basis of life, though we seem to forget it in our mad pursuit of dollars and pleasure, we go on increasing the population thoughtlessly, never stopping to consider that for each new mouth an increased supply of food is necessary, or even wondering where it is to come from. Have we not always gone to the store, given our order and received food in exchange for our money? The grocer and market man always had plenty and was anxious to exchange. Why should we worry? We have the money he needs, he will get the supplies from somewhere. We seem to forget his inability to supply us with flour a short time ago; or his present difficulty in furnishing sugar. You may think this is due to manipulation or demand for export, and in a measure it may be true, but you should not overlook the fact that the world's surplus of foodstuffs is extremely low, labor is disposed to leave the farm for the factory, where shorter hours and higher wages are in vogue, the tendency all along the line is to produce less and consume more; these are only a few of the farmer's troubles; he is waging a ceaseless warfare against bugs and insects which appear to be increasing at an alarming rate, as soon as he overcomes one pest a new one appears. It seems that in this struggle for food the insects are slowly winning. The very fertility of the soil is being gradually exhausted. By carrying his produce to the cities and dumping the refuse in the sea, to the great detriment of the fisheries, instead of putting it back on the land from whence it came, the farmer is burning the candle at both ends.

The city man goes merrily along more prosperous than ever. Why should he worry? He has more money than ever, more automobiles and finer ones, more theatres and parties, surely he will not "miss the water until the well runs dry."

The bays, sounds and rivers between Massachusetts and North Carolina are the heart of the American fisheries, most of the choice varieties spawn and rear their young in these waters. In this area the great oyster farms, with their millions of invested capital, are located, it is here, by some attraction, possibly the abundance of sea food, that mankind settled in dense numbers, erecting factories for the wares of American genius. The manufacturer in his desire to cheapen his products, or increase his profits and without ever a thought for the future, turns the acids, dyestuffs and any other waste material which may have been used in his manufacturing process into the sewers or open streams as the case may warrant. These poisons find their way to the sea and are distributed for miles in every direction by wind and tide, changing the very chemical properties of the water, and destroying fish life of all kinds. The mature fish are killed or driven away, and even the minute organisms upon which the young are to feed are destroyed. Shad once so plentiful and cheap are each year becoming scarcer, as well as all other coast varieties: our salmon must now come from Canada, or far away Alaska; our halibut from Greenland or the Pacific ocean; and even the lowly cod and haddock are caught far away at sea by large steam trawlers. Gradually all known fishing grounds are being worked out or destroyed. It is true there may be new methods devised or new areas found, but it will be at a great distance from market, and conducted only at enormous expense. Lobsters, once plentiful along our coast, are so scarce we now depend cheifly upon the British provinces for our supply. The soft shell clams that grew on our beaches in such vast numbers and so quickly that the supply was considered inexhaustible, are practically gone, the few that find their way to market now come from Maine and the maritime provinces, once a drug on the market at fifty cents a bushel, now worth several dollars and in short supply at that. The same condition surrounds the scallop and quohaug or hard clam; they grow scarcer and higher each year; in short, the entire coast from Mexico to Greenland is being fished to supply the present market; there are no reserve supplies in sight; this great source of food once prolific and cheap is passing beyond the reach of the masses, destined to be in future a luxury available only to the rich.

Oysters, once plentiful and cheap, refuse to propagate in the zones of manufacturing waste, and the great cultivated areas are largely located in these zones. Unless something is done at once to correct the evil, these great beds must be abandoned. Not only does the chemical waste destroy the young, it affects also the flavor of the adult oyster, giving it that brassy or copperish tang, and often changing its color to an objectionable blue or green.

The popularity of oysters here suffered from these conditions, many people believing all oysters had lost their old-time flavor, while others thought their taste had changed, when as a matter of fact it was the oyster that had changed; what they needed was varieties grown in pure water, and they are to be had, just as good as our fathers raved over, but they must be grown in pure ocean water in outlying districts, such, for instance, as Cape Cod or the inlets on the Atlantic seaboard remote from contamination, these areas are small and entail considerable risk from the elements, considerably increasing the cost of cultivation and marketing, the pure ocean oyster of the future, will be a luxury available to the rich only.

The great beds in the bays and rivers of the contaminated zones can produce oysters in great abundance and at low cost for all time, if the waters are purified, but this requires prompt and drastic action against manufacturers and can be carried out only by the federal government. Will it be done in time? Manufacturers in the end will be compelled to reclaim their acids or use other means of disposal than tide water. The outlook is very discouraging; while we wait, the fisheries situation fast ap-

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Report on Uniform Egg Law

To the officers and members of the Association of Food, Feed and Drug Officials of the South Central States in Convention at Chattanooga, Tenn., April 28th-30th, 1920:

We, the committee on a uniform good egg bill, respectfully submit the following report:

We have examined the egg laws of the leading egg producing states, and a proposed uniform good egg bill adopted by the City, State and Federal food and drug officials, representatives of the U. S. Food Administration, and representatives of the poultry and egg dealers of the United States in convention, January 24-25, 1919, in St. Louis, Mo. The drift of legislation covering the traffic in and sale of eggs throughout the country is unquestionably toward uniformity. The basic provisions of these laws follow the provisions recommended in the proposed uniform bill adopted by the convention in St. Louis. A number of the leading egg producing states changed their egg laws to conform to the recommendations of this convention within a few months after the proposed uniform bill was reported; and report to your committee that very satisfactory results are being accomplished under the operation of the new laws. Notably among these states are Iowa and Missouri. South Dakota, California and other states followed suit.

The bill, hereinafter set out and proposed by your committee to be adopted by this Association and to be enacted into law by the South Central States, embodies, in the main, the provisions of the bill proposed by the convention of officials and egg experts in St. Louis, heretofore referred to.

A BILL
to be entitled
AN ACT

To provide for the regulation of traffic in eggs; to provide for the licensing of dealers in eggs; to prevent fraud and misrepresentation in dealing in eggs; to prevent the sale of eggs unfit for human food; and to fix penalties for violation of the provisions hereof.

Be It Enacted by the Legislature of the State of ——— that:

Section 1. No person, firm or corporation shall sell, offer or expose for sale, or have in his possession, or traffic in, any egg unfit for human food, unless the same is broken in shell and then denatured so that it cannot be used for human food. For the purposes of this act, an egg shall be deemed unfit for human food if it be addled or moldy, a black rot, a white rot, or a blood ring, or if it has an adherent yolk, or a bloody or green white; or if it be incubated beyond the blood ring stage; or if it consists in whole or in part of a filthy, decomposed or putrid substance.

Section 2. No person, firm or corporation shall, in buying or selling eggs, take or give a greater or less dockage for eggs unfit for food as defined in section one of this act than the actual dockage which has been determined by the careful handling of the eggs so purchased or sold, and he shall keep such candling records as may be required by the rules and regulations of (enforcing officer). All such records shall be open at all reasonable times for examination by (enforcing officer or inspectors of the ———Department). The term "candling" as used herein shall be construed to mean the careful examination, in a partially dark room or place, of the whole egg by means of a strong light, the apparatus and method employed, to be such as shall be approved by (enforcing officer). Every person, firm or corporation engaged in the business of buying eggs in this state for resale or consignment shall provide and maintain an adequate place for the accurate candling of eggs and a suitable place for the proper handling of eggs which are intended to be used for human food.

Section 3. There shall be placed on the top layer of every case of candled eggs, by the person candling same, a candling certificate. Such candling certificate shall be printed on cards or sheets of paper not smaller in size than 2⅜x4¼ inches, and shall give the date of candling the eggs contained in the case in which it is placed, the name, initials or number of the persons candling the eggs, and the name of the state and the license number of the person, firm or corporation for which the eggs were candled. Such certificate shall be in the following words and form:

The eggs in this case were candled .....
Date

By .....
(Signature of person candling the eggs).

Of .....
(Individual, firm or corporation).

License No. .....Ala.
(Address)

Section 4. For the purpose of enforcing the provisions of this act, it is hereby required that thirty days after this act takes effect, and on or before the first day of April annually thereafter, no person, firm or corporation shall engage in the business of buying, selling, dealing in or trading in eggs, except those retailers who buy direct from licensees only and who do not sell in lots greater than one case, without first obtaining from the (enforcing officer) a license to conduct such business. Such (enforcing officer), upon receipt of a proper application upon forms such as he may prescribe, accompanied by an annual license fee of $1.00, shall thereupon issue to such person, firm or corporation an annual license to engage in such business. Provided, that any person, firm or corporation operating more than one place of business where eggs are bought, shall procure a license for each such place of business. All such licenses shall expire at the close of business on March 31 of each year.

Section 5. The (enforcing officer) shall enforce the provisions of this act and shall make suitable rules and regulations for carrying out its provisions. He shall determine the conditions under which eggs previously candled shall be recandled before sale, in order to safeguard the purchaser against buying such eggs as are unfit for human food, which may be contained in such lot.

Section 6. Any person, firm or corporation failing to comply with the requirements of, or violating any of the provisions of this act, shall be guilty of a misdemeanor, and shall, upon conviction for the first offense, be fined not less than $10.00 nor more than $50.00. For any subsequent offense his license may be suspended or revoked, at the discretion of the (enforcing officer). Should any person, firm or corporation be convicted of buying or trading in eggs during the time of the suspension of his license as specified in a written order by the (enforcing officer) or after the date on which his license was ordered to be revoked, the offender shall be punished by a fine of one hundred dollars for each offense.

Section 7. The words used in this act shall be construed to import the plural or singular, as the case demands.

Section Repealing clause?

Section 8. This act shall be in force and effect upon its passage and approval.

Should a state desire to define in the act the term "eggs" or "fresh eggs," "yard eggs," "ranch eggs," "farm eggs," or "Missouri eggs," "Tennessee eggs," etc., "cold storage eggs," "second grade eggs," and in connection therewith the term "eggs unfit for human food," we recommend that the phrase, "to provide Standards," be included in the caption of the bill, and suggest that the definition be, subject to revision by Dr. M. E. Pennington of the United States Food Research Laboratory, Philadelphia, Pa., or other expert on the composition of eggs, as follows:

Section 1. For the purposes of this act eggs shall be graded as follows: Eggs or fresh eggs, cold storage eggs, second grade eggs and eggs unfit for human consumption. Yard eggs, ranch eggs, farm eggs, Missouri eggs, Tennessee eggs and all similar terms shall be construed to apply as hereinafter set out.

(a). The term "eggs" or "fresh eggs" shall be used only for eggs that are sound, sweet, clear and full (not more than two and five-tenths milligrams of ammonia per one hundred grams of egg), and which have not been held for more than fourteen days after having been dropped from the hen.

(b). The term "cold storage eggs" shall be used on all eggs which have been held in cold storage for a period exceeding thirty days. They shall be sound, sweet, clear and reasonably full and shall contain not to exceed four milligrams of ammonia per one hundred grams of egg. Cold storage eggs when offered or exposed for sale shall be marked by a sign or label in letters at least two inches high, "These are cold stored goods."

(c). The term "second grade eggs" shall be used for all eggs which are not covered by paragraphs (a), (b), (e), and (f) of this section, and which are not classed as "eggs unfit for human food."

(d). The term "eggs unfit for human food" shall be used for all eggs that are addled or moldy, a black rot, a white rot, or blood ring; or if it has an adherent yolk, or a bloody or green white; or if it be an incubator egg; or if it contain more than four milligrams of ammonia per one hundred grams of egg; or if it consist in whole or in part of filthy, decomposed or putrid substance.

(e). The terms "yard eggs," "ranch eggs," "farm eggs," or similar terms which are usually used to indicate fresh eggs, shall be construed to mean fresh eggs, as defined in paragraph (a) of this section.

(f). The terms "Missouri eggs," "Tennessee eggs," or similar terms which are used to indicate the state or section of the country in which they were produced, shall be used only for eggs that are sound, sweet, clear and full (not more than three and two-tenths per cent evaporation and which contain not more than two milligrams of ammonia per one hundred grams of egg), and which have not been held more than twenty-one days after having been dropped from the hen.

Magnetic Force Arrests Development of Decay in Fruits and Vegetables

"AN invention to keep fresh indefinitely fruits and vegetables, without the use of ice or chemicals, was demonstrated in New York by its inventor, Dr. Harry Barringer Cox, whose work in the invention of the dry battery, the ground wireless and many other contrivances is known throughout this country and Europe. Dr. Cox, who brought the apparatus here from California without removing its contents, in order to test its efficiency on a moving train, asserted that the contrivance would prove to be one of the great factors in reducing the cost of living.

"Magnetism, or as Dr. Cox phrased it, that still undeveloped force in the earth which makes a compass needle point north, is, according to the inventor, the force that is made use of in the apparatus. Its vitalizing, or preserving powers he discovered by accident after thirty-five years of scientific research. His discovery, he asserted, opens up the field of earth magnetism so that it is likely to overshadow electricity in importance.

"Dr. Cox displayed endorsements of the apparatus by many prominent persons. The United States Department of Agriculture, the California Fruit Growers' Association and the Los Angeles Chamber of Commerce, which styled the contrivance as 'the greatest discovery of the age,' are among the endorsers. He asserted that the invention would prevent waste amounting to $1,000,000,000 a year.

"In the room at the Hotel Pennsylvania where Dr. Cox demonstrated his apparatus, the thermometer stood close to 80 degrees. In a corner was a box the size of a suitcase which held tin cans, about the size of a silk hat. A copper wire was attached to the radiator and run through the bottom of the box. This wire was attached to a 'vitalizer' at the bottom of each tin box or 'consavador.' He explained that the wire could be attached to a gas pipe, water pipe or any other metallic substance connected ultimately with earth or water.

"The first cover he removed was one marked: 'Orange, 1917.' The orange was not only firm and as cool as if it had just been picked, but was covered with moisture. He then showed 'last year's new potatoes,' then old potatoes, carrots, and other vegetables. They were all firm, and varied in temperature. The products apparently were the same as on the day they were taken from the ground or tree.

" 'This connection,' explained Dr. Cox, 'harnesses the earth currents. The vital forces of the earth are transmitted through the "vitalizer" to the products in the receptacle which are kept in as perfect a state as when on the vine or tree or in the earth.

" 'Vegetation is due to the action of radioactive rays of the sun, which are produced in the earth, and which through this new method may be transmitted by metal connection to any vessel and the products contained therein. The process going on in the vessel is exactly the same as that which goes on in the earth. I have invented nothing new. I have simply discovered one of nature's many wonderful and simple laws.'

"When Dr. Cox was asked to explain the varying temperatures and why the products remained 'alive,' he said that he, as a scientist, could no more do so than a physician could explain life and why a person's tem-

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Shredded Wheat Co. Acquitted

THE Federal Trade Commission has issued a unanimous decree in the matter of its charge against the Shredded Wheat Company for unfair competition, accusing it of having prosecuted the Ross Food Company for making a product similar to its own, dismissing the complaint.

This is one of the most interesting cases ever brought before the commission's investigators on complaint and has attracted wide attention in business circles. Briefly stated, the facts turned out that the Ross Food Company of Batavia, N. Y., made and sold a wheat biscuit almost identical in form and character to the well known Niagara Falls product, whereupon the Shredded Wheat Company brought suit in the Federal Court of Connecticut for conspiraey with certain jobbers to injure the Shredded Wheat Company's reputation, trade and standing. The action was against the Ross Company, its officers and the jobbers concerned.

Shortly after that the Federal Trade Commission brought a counter action against the Shredded Wheat Company for having unfairly interfered with the Ross rights by bringing against it the "costly and vexatious" suit; also with sundry other acts by which the Shredded Wheat Company had tried to check the Ross assault on its trade. The Shredded Wheat Company claimed it had done exactly what the law intended should be done in righting what it believed to be a wrong, and put up a strong defense at the various hearings held there and elsewhere on the issue.

This action of the Federal Trade Commission had nothing directly to do with the original action in the Federal Courts, which ultimately resulted in favor of the Shredded Wheat Company by a decree requiring the Ross Company to make its biscuit so that it would not be confused with the original product, but refusing to stop the making of a product plainly distinguishable from the older product. The unfair trade case has been hanging fire ever since, until at a meeting last week the commission dismissed the whole proceeding and thus declared the Shredded Wheat Company not guilty of unfair trading.

William C. Breed, of Breed, Abbott & Morgan, who has acted as counsel for the Shredded Wheat Company both in the suit in the United States Court, in which the rights of the Shredded Wheat Company were sustained, and also in the Federal Trade Commission suit just decided, had this to say:

"I am particularly pleased with the decision of the Federal Trade Commission in the case against the Shredded Wheat Company, not only from the point of view of its effect upon that company and upon the interests of many other manufacturers who spend large sums of money in developing good will through advertising their products, particularly food products, and rely upon quality and merit, to sustain their trade, but also from the point of view of the effect the decision will probably have upon the character of the work of the Federal Trade Commission itself.

"I have always maintained that had the commission been in possession of the full facts of this case before it issued its complaint based upon the relation of the Ross Food Company the complaint would never have been issued against the Shredded Wheat Company but would in fact have been issued by the commission against the Ross Food Company, the relator.

"The basie question involved both in the United States court case and in the proceedings before the Federal Trade Commission concerned the right of a manufacturer to use all reasonable and lawful means to protcct his good will, built up through years of hard work, organization and well directed advertising against any other corporation, or party seeking to enter the market and built itself up by putting out an imitation product.

"The decision of the commission, following the court, practically holds that the acts of the Shredded Wheat Company in asserting its rights by a suit in court and publicly stating its claim in an open and frank manner did not constitute unfair competition.

"The Federal Trade Commission by its decision puts itself in line with the decisions of the United States District Court and the United States Circuit Court of Appeals, which had previously decided that the Shredded Wheat Company had rights in connection with the form and appearance of its biseuit which were bound to be respected and regarded by others seeking to put out an imitation product.

"The Federal Trade Commission act provides that the commission shall issue complaints where it thinks that the law has been violated, and later constitutes it the judges of the facts which are presented upon the trial. This case was one of the first begun before the commission and has had a very extended trial, and the decision of the commission dismissing its own complaint shows the fairness and lack of prejudice on the part of the commission.

Imported Butter Denied Entry

Several shipments of butter offered for entry into the United States from foreign countries have been denied entry because the butter failed to come up to the requirements of the Federal food and drugs act, according to officials of the Bureau of Chemistry, United States Department of Agriculture. The imported butter has to meet the same standards and tests as the domestic product. The majority of the shipments which were refused entry contained too little butter fat and too much salt and water, but a few contained boric acid, a harmful preservative.

More butter came into the United States last year than during any other single year for the last ten years. The quantity of butter exported from the United States was also larger than normal and more than three times as much as the imports. The total imports of butter and butter substitutes for the year 1919 amounted to 9,519,368 pounds; the exports of butter for the same period were 34,556,485 pounds.

The greater part of the butter imported into the United States now comes from Canada, but shipments come also from Denmark, Australia, Argentina and New Zealand. Of 300 shipments of butter from Canada examined, 33, or a little more than 10 per cent of those examined, were denied entry into the United States. A few shipments from other countries also were not admitted because they were adulterated under the food and drugs act.

Effects of Enforcement of the National Food and Drug Law of June 30th, 1906

By JAMES FOUST, Director, Bureau of Foods, Department of Agriculture

I FIND it difficult to separate, sharply, the effects of this law, itself, and those of the long and vigorous publicity campaign which led to its final enactment. During this campaign, made possible only by the free, public-spirited assistance of the press, the people of the States were strongly roused to the wide-spread abuses that existed and to their increasing menace.

In 1897, barely a dozen states had enacted general food laws; by 1906, few states were without such laws. Practically all these laws conformed to the general type of the proposed national act. Thereby the campaign for an interstate food and drug commerce law secured substantially uniform requirements with respect to foods, which would have been of great value to both the bogus and the honest maker and dealer in these commodities, even though the national food and drugs act, itself, had failed of passage.

This campaign and the passage of the national act, moreover, encouraged the strong, true men of the trade and led to the organizing of the National Wholesale Grocers' Association and to the organization of active and efficient state associations, and also to the strong development of far-sighted, efficient bodies interested in particular growths of products, such as the National Canners' Association and the Specialty Manufacturers' Association. In my survey of changes for good effected in the food business, since 1900, the strong aid of these influential organizations cannot, in justice, be overlooked.

The national law, itself, is a compromise, with the weaknesses and, no doubt, some of the wisdoms of the compromise. As a means for the direct suppression of the use in commercial foods of deleterious substances, it has proven weak when brought to the test of Supreme Court construction. It ought not to be necessary that the people should have to bear the burden of proof now required under the national act before a food manufacturer can be restrained from adding, for his own commercial advantage, new substances, possibly deleterious to the health of his customers, until such substance shall have been tested by competent public authority and certified to be harmless. But this is what is now required by the present wording of the national act, and it is not only necessary to prove that the added ingredient is deleterious or poisonous, but that, in the quantity used, the product containing it is so affected thereby that it may itself be injurious to health; and even such undesirable additions may be used externally as preservatives if "the preservative is necessarily removed mechanically by maceration in water."

The phrasing of the corresponding clause of the Pennsylvania food law is far better, declaring a food to be adulterated "if it contains any added substance or ingredient which is poisonous or deleterious to health" —which prohibits the introduction of such material in *any* quantity under the opinion of the Supreme Court of Pennsylvania in Commonwealth vs. Kevin. This wording should be substituted for the present language of the National Act.

The obscurities of the clause exempting foods bearing "distinctive names," as this term has been construed in the opinion of Attorney General Wickersham, and of the definition of the term "blend," which is wide in the scope of its effect, are unfortunate.

The provision for a board of regulation, composed of three cabinet officers, of whom two must be chiefly occupied with other affairs, could well be replaced by giving one competent, broad-gauged man the power and holding him responsible.

Notwithstanding the limits imposed by the weaknesses above mentioned, the enforcement of the national law has caused the disappearance from the interstate food trade of a host of bad products.

Strengthened by the Shorley amendment, the law has wrought a revolution in the patent medicine business, and is rapidly driving the dangerous frauds out of existence.

I would respectfully urge, if the Federal courts would rely less upon much restricted publicity and a nominal fine to arouse the fear of the evil-doer, and would, now that the law's requirements are generally understood, impose the full penalty of the law upon old and daring offenders even more could be accomplished.

Using Blanket to Save Ice

(Prepared by the United States Department of Agriculture.)

The blanketed ice in a refrigerator is a slacker at its post of duty, and the person who placed the blanket there is the cause of it, specialists in the department of agriculture declare. A refrigerator is kept cold by the ice melting and taking up the heat within the insulated walls. When the ice is kept from melting ice is saved but not food.

At times when it is necessary to wrap the ice to make it last until the new supply comes, any perishable food which is to be used without further cooking should be moved up as close to the ice as possible. Ordinarily, however, it is better to keep food in other compartments in order that the air may circulate freely.

Milk Profiteers Take Terrific Death Toll

Profiteering in milk is responsible for the death of hundreds in Vienna. Statistics gathered by the American Red Cross show that 50,000 persons are suffering from influenza in the Austrian city, and three-fourths of these are unable to obtain medical attention, deprived of medicines and nourishing food.

Milk, most indispensable of foods for the influenza patient, is virtually unobtainable for any but the rich, who are paying as much as $10 a quart to the profiteers who control the output. The municipal government has forbidden the consumption of milk by any but sick persons and infants. To evade this ruling, profiteers sell a seventy per cent dilution of milk to the poorer customers, reserving the more nourishing, whole product for those who can pay their price.

What Are Cold Storage Products?

THE Cold Storage Bill pending in Congress failed to pass at the session recently ended, largely because of differing opinions regarding the definition of Cold Storage Products.

Fresh meats must be handled under refrigeration to be properly marketed. Therefore, they should be allowed a period of exemption. 30 days has been recognized by state Legislatures as a reasonable marketing period.

Likewise, meats carried under refrigeration during process of curing should not be classed as Cold Storage goods for the reason that they are seldom kept in refrigeration after the curing process is completed.

The pending bill, as passed by the Senate, recognizes the two important distinctions just mentioned.

It is workable, practical and conforms more nearly to the Uniform Cold Storage Law recommended by the Commissioners on Uniform Laws in 1914, and by the American Bar Association in 1915, than the many Cold Storage bills which have been introduced in Congress during the last several years.

Such a bill deserves approval and support.

ARMOUR AND COMPANY
CHICAGO

Why Cool Fruit Stands Shipping Better Than Warm

MECHANICAL apparatus has been devised by investigators of the United States Department of Agriculture which proves scientifically that, other things being equal, it is preferable to pick such small fruit as strawberries, cherries, and raspberries in the early morning while it is still cool, particularly if the fruit is to be kept some time or shipped a considerable distance. The advantage of early picking lies in the fact that when cool the epidermis, or skin, of the fruit is considerably tougher, generally speaking, than when warm, and so is less easily bruised, as shown by tests. Similarly, the skin of fruit immediately after it has been cooled is more resistant than it is at an ordinary room temperature. However, after fruit has been in an ice box more than 24 hours, the resistance of its skin is in some cases not so great as that of freshly picked fruit which has been cooled quickly to ice-box temperature. It seems possible, therefore, that the storing of fruit tends, after a time, to make the epidermis more tender and more easily ruptured.

The apparatus, while having many distinctive features, is a modified Jolly balance. It consists of an upright metal standard from the top of which an arm projects to one side supporting a sensitive coil spring. Attached to the lower end of the latter is a metal rod that passes through a glass tube, the latter being held in place by an arm attached to the upright. A hair line on the tube and on the metal rod make it possible to determine the point at which tension on the spring balances a given weight. At the lower end of the metal arm a glass rod is attached, to which is cemented a small glass needle with a rounded end.

In operating the apparatus the fruit is placed on the stand of the instrument in a holder, and the stand so adjusted that the surface of the fruit just comes in contact with the tip of the glass needle, when the hair lines on the metal rod and glass tube coincide.

The tension on the spring is released by means of a rack and pinion adjustment, permitting the standard to telescope slowly, thereby lessening the tension of the spring. The operator is able to tell the instant at which lessened tension permits the needle to puncture the fruit, because movement of the needle is indicated by movement of one of the hair lines. When this takes place he at once stops the telescoping of the standard. Then, by reading the scale on the side of the instrument, the weight required to balance the tension on the spring is determined. The weight of the glass rod, minus the weight necessary to balance the tension of the spring, gives the pressure of the needle on the fruit at the time it punctures the skin.

A large number of tests were made with fruit when it was freshly picked, and cooled after washing it in tap water; also after the fruit had been kept in a refrigerator for 24 hours, and again after cooled fruit had been brought to room temperature.

The tests confirm the wisdom of a practice common in many regions, namely, the picking of berries in the morning when still cool.

Food Rots and Freezes

E. T. Meredith, Secretary of Agriculture, Speaking Before Chamber of Commerce of the United States, Atlantic City, N. J., Gives Some Pertinent Facts Regarding Food Losses Through Shipping.

"A few things the Department of Agriculture is doing to prevent waste of foods," he said, "taken somewhat at random from among many, might be mentioned:

Twenty-five million dollars' worth of sweet potatoes—were wasted in 1919. They rotted because they were stored in earth banks—put on the ground in small heaps and covered with dirt—instead of being stored in properly constructed warehouses. About 50 per cent of sweet potatoes stored in earth banks become so damaged that they can not be eaten. Specialists of the Department of Agriculture developed a storage house that reduced the loss, when used, from 50 per cent to 2 per cent. More than 600 such storage houses, recommended by the Bureau of Markets, were erected—enough to take care of about 9 per cent of the sweet potatoes stored every year. Then we had practically to discontinue the educational campaign, because our appropriations were decreased to such an extent that we had no money for the purpose.

Multiplied millions of dollars' worth of fruits and vegetables rot every year in railroad cars. In two months last winter $3,000,000 worth of apples from the Pacific Northwest were frozen in transit. That is the estimated loss on one kind of fruit from one section in two months. You can imagine what it is on all kinds of fruit and all kinds of vegetables from all parts of the country in a year. Losses from heat are just about as heavy as those from cold. The Department of Agriculture has been trying for a long time to eliminate those losses and it has reduced them very greatly. Many of the refrigerator cars in use on the railroads are inefficient because of faulty construction, and are unsuitable for the shipment of perishable products. A new type of refrigerator car, therefore, was designed by department specialists and it was so efficient that the Railroad Administration adopted it as a standard. Practically all refrigerator cars built or rebuilt in the United States during the past two years have followed the specifications recommended by the department. Efforts are now being made to perfect a method of heating the standard refrigerator car in cold weather. Specifications already have been worked out for such a method and have been adopted by the Railroad Administration. This work has resulted in the saving of many millions of dollars a year to the producers and consumers of the United States.

Losses caused by improper loading and packing of fruits and vegetables frequently run as high as 40 to 50 per cent of the car load. Specifications for loading cars with certain fruits and vegetables have been developed by the department. We have had no opportunity to check up on all cars loaded according to our directions, but we have checked up on potatoes, which formerly suffered very severely. Information collected by our inspectors in Chicago show that sacked potatoes, loaded in the manner suggested by the department, sustained practically no loss.

The department found cull oranges and lemons in California selling for $5 a ton. It established a citrus-fruit laboratory to discover uses for these fruits. As a result growers are now receiving from $25 to $30 a ton for culls, and the citrus by-products plants, established since the department demonstrated the uses for cull fruit, produced last year 6,000,000 pounds of orange marmalade and jelly, 1,500,000 pounds of citric acid, 500,000 pounds of citrate of lime and 50,000 pounds of lemon oil.

The department introduced the navel orange from Brazil. Last year, 13,000,000 boxes of California navel oranges were distributed among the people of this country.

We introduced, in spite of great difficulties, the Smyrna fig from Turkey. The industry is established, and the United States will soon be producing enough high grade figs to meet its own demands.

We have introduced the date from Egypt, established it, improved it and the United States is today producing the finest dates grown anywhere in the world.

Famous Men and Their Favorite Dishes

BASING his remarks on the famous and untranslateable pun of the philosopher Fuerbach, *"Der Mensch ist was er isst"* (Man is what he eats), a Swiss physician some time ago wrote to say that there is no doubt that the food eaten has great influence on the temperament of mankind, and that, on the other hand, a man shows certain characteristics in choosing certain kinds of food. When John the Baptist nourished himself with locusts and wild honey it was just as much in keeping with his character as the preference of Zoroaster for bread, cresses and water. Plato, the great philosopher, ate, as a rule, only honey, bread, vegetables, and fruit. The Carthaginian general Hannibal was often satisfied with olives, while the Roman soldier Sulla was one of the greatest gourmands of his day. His favorite dishes were the flesh of the wild ass, chickens drowned in a certain brand of wine, the brains of ostriches and cranes and snails. Mahomet preferred mutton and milk to all other edibles and drinks. Charles the Great ate venison with especial pleasure, and King Henry IV of France ate melons and oysters whenever possible. Charles XII of Sweden was often satisfied with simple bread and butter. Frederick the Great preferred "polenta," and Emperor Joseph II of Austria omelettes and hard bread.

Napoleon I was passionately fond of coffee. He drank daily from twenty to twenty-five cups, and never felt any evil effect from it. Emperor William I was fond of oysters and lobsters.

Artists, poets and thinkers seem to have a liking for a greater variety of dishes and drinks than kings and princes. Goethe loved champagne; Schiller, ham, patties, salmon, smoked meats and peas. Lessing's favorite dish was lentils. Kant also manifested a preference for lentils, for Pomeranian pudding, and baked fruit. The philosopher Leignitz was fond of thick milk and apple cakes.

Increasing the Use of Dairy Products in the Home

A MORE liberal use of dairy products in the home has long been urged by food officials, dietitians and experts of the Department of Agriculture, as a means of correcting malnutrition and reducing the cost of living. Not only is the greater use of whole milk advised but also the use of the secondary products of the dairy, butter, cheese, buttermilk, cottage cheese, and *skimmed milk* is encouraged.

HEBE

—a wholesome, nutritious food product, brings skimmed milk into the home as an economical liquid ingredient for cooking and baking and for use in coffee.

HEBE is pure skimmed milk evaporated to double strength enriched with cocoanut fat. It contains all the protein, mineral salts and sugar of the skimmed milk, plus the heat and energy value of a wholesome, easily digested vegetable fat. It is an excellent cooking ingredient, adding food value and flavor to foods prepared with it.

HEBE is produced under the most sanitary conditions and is sterilized in the hermetically sealed can. The label tells plainly what HEBE is, recommends it for specific uses, and states that it is not to be used in the place of whole milk for infant feeding. It is just as truthfully and frankly advertised and sold.

Our booklets "Today's Food Problems" and "HEBE—It's Dietetic and Economic Value" tell the complete story of how HEBE helps increase the use of dairy products in the home. Both sent free on request. Address 2609 Consumers Bldg., Chicago.

Chicago **THE HEBE COMPANY** **Seattle**

Capsicum in Ginger Ale To Be Stated On Label

FEDERAL inspectors have been instructed to watch shipments of ginger ale coming within the jurisdiction of the Federal Food and Drugs Act to see that the bottles are labeled in accordance with the provisions of the law as outlined in Food Inspection Division 177, according to a statement of the officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of the law. That decision provides that if capsicum which is the extract of red pepper is present in ginger ale it must be declared upon the label. All interstate shipments of ginger ale found on or after March 16 which are not properly labeled in this particular will be seized, say the officials, and shipments from foreign countries will be denied entry into the United States unless correctly labeled.

In the enforcement of the Federal Food and Drugs Act, the Department of Agriculture has always advised the trade as fully as possible by food inspection decisions, Service and Regulatory Announcements, press notices, etc., when an interpretation of the law involved a change of labels, formulas, or of standards for products. The trade is given time for adjustment where such a short delay is not seriously detrimental to the public interest.

Food Inspection Decision 177 entitled, "Soda Water Flavors and Soda, Soda Water," in conformity with this policy, was issued by the United States Department of Agriculture, August 20, 1918. It was published again in Circular 136 entitled, "Standards of Purity for Food Products."

This states, in effect, that the presence of capsicum, the extract of red pepper, in ginger ale must be declared on the label. It appears from an investigation of numerous ginger ales on the market that while this regulation is being generally complied with, yet there are some bottlers of ginger ale whose products come within the jurisdiction of the Federal Food and Drugs Act of 1906, who apparently are not familiar with the provisions of this regulation. Therefore, bottlers who are not complying with Food Inspection Decision 177 are warned that shipments made on or after March 16, 1920, of ginger ale which is not properly labeled will be actively proceeded against under Section 10 of the Federal Food and Drugs Act, if interstate shipment is made, or under Section 11 in the case of foreign goods offered for entry into this country.

The Sugar Situation

SOME time ago the president decided not to exercise his war-time authority over the sugar situation by purchasing the Cuban crop for 1920. Some have felt that this authority should still have been exercised, in order to secure the benefit of a lower price on sugar. However, this is probably because the understanding of the situation is not general.

The Equalization Board has had no contract with the Western beet sugar or Louisiana cane sugar producers. The law which made it possible for the Equalization Board to act limits the control over domestic sugars to June 30th, 1920. Had the Board purchased the 1920 Cuban crop, it would have found itself in the position of trying to maintain a uniform, reasonable price with no control over the sugars that might come from Hawaii, Porto Rico, Louisiana and all Western sources after the 30th of June. The Board was able to deal with the unified Cuban agency for the entire 1919 crop, but there is now no such organization, so that they would have been compelled to buy from individual producers in the Cuban market, which undoubtedly would have had a tendency to strengthen the market and further increase the price.

Present indications, are, however, that more sugar will be available for consumption in the United States than had heretofore been expected. This is because the European nations have found themselves financially unable to purchase as large a proportion of the Cuban sugar as it was expected they would buy, and the United States seems to be the next most eager purchaser. It is, therefore, expected that larger quantities of sugar will be available for distribution, particularly through the months of March and April, and that undoubtedly prices will automatically be reduced.

The demand for sugar brings to mind a contrast between conditions of the present day and those of one hundred years ago, at which time sugar was a very scarce article and considered in the light of a luxury. Granulated sugar was unknown at that time. Sugar could be bought in loaf or lump form, and the purchaser broke it up for use in the household. Soon after the arrival of the Dutch on Manhattan Island a sugar refinery was built on Liberty street, and remained an important manufacturing establishment for a century and a half. Later on, it was discovered that a water front was a very much more economical place for conducting a refinery and, consequently, all refineries are now located where they have easy access to water transportation.

Refining consists of converting raw sugar into refined grades. There is, of course, some loss of sugar in this process, but the amount lost now is very small compared to a hundred years ago. Today the refiner obtains 93-94 pounds of refined sugar from 100 pounds of raw sugar, whereas a century ago 50 pounds of refined sugar was all that could be expected from 100 pounds of raw material.

The refining process consists of melting, clarifying, filtering and crystallizing by means of boiling. These processes represent some twenty or thirty steps. "Formerly the melting was done in a large, open kettle or copper boiler, the filtering accomplished by straining through blankets, and the clarifying by the use of bullock's blood, albumen and clay. A hundred years ago no centrifugal or granulating machine was in operation, and sugar was run into molds and baked in ovens heated to the proper temperature. The invention of the centrifugal machine and modern granulator has made granulated sugar possible.

The amount of sugar consumed in the United States runs into figures that are almost incomprehensible. In 1919 we consumed over nine billion pounds of sugar, or slightly more than four million five hundred thousand tons, making an average of ninety-two pounds per capita per year as against a consumption of eighty-five pounds per capita per year for the pre-war times. The steady increase in the consumption of this article is evidenced by the following table taken from the *Weekly News Letter* of January 21, 1920:

Year	Pounds
1866-1875	35
1876-1885	42
1886-1895	57
1896-1905	67
1906-1914	81

One is justified in stopping to ponder over the effects of this increased consumption of a food article which represents 100 per cent concentration, and 100 per cent carbohydrate. On account of the thorough refining process this product is practically 100 per cent pure, which means that it has been deprived of all mineral salts and other natural food-stuffs that were found along with it in the plant in which it was formed. There is no question but that the majority of people need more carbohydrate in their diet than they are prone to get in an ordinary American dietary, but there is considerable question as to whether or not this concentrated form is the best way in which to take it. Ninety-two pounds per capita per year means an average daily consumption of more than one-half of a measuring cup.

Brandl, experimenting upon dogs a few years ago, found that a 6 per cent solution of sugar placed in a dog's stomach, through a tube, produced almost no noticeable effects, while a 10 per cent solution produced a decided irritation of the mucous membrane of the stomach, and 20 per cent produced a very pronounced reaction, almost causing gastritis.

This experiment would indicate that sugar used in the less concentrated forms may not be objectionable, while the more concentrated forms, such as candy, preserves and the like may produce decidedly irritating effects. The medical profession, from observations made of patients, are quite well agreed that there is grave danger from excessive

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PURITY STRENGTH AND FINE FLAVOR
WINNER OF 17 HIGHEST AWARDS AT AMERICAN AND EUROPEAN EXPOSITIONS
LARGEST SELLING BRAND IN THE UNITED STATES
32 FLAVORS AND OLD VIRGINIA FRUITTI-PUNCH
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Brewery in middle west anxious to learn of some permanently profitable enterprise for which its plant can be economically converted. Address

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38 So. Dearborn St. Chicago

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

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THE WHOLESOME
BAKING POWDER

insures whiter, sweeter and lighter cake and bread—it raises the baking just right, and adds to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

RUMFORD CHEMICAL WORKS,
Providence, R. I.

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THE SUGAR SITUATION

Continued from preceding page

use of sugar, particularly the commercial type of sugar. There are several other natural sugars which have an equal food value with that of the commercial, or cane sugar. The simple sugars which are found in practically all fruits and many of the vegetables, namely, levulose and glucose, more familiarly known as fruit sugar and grape sugar, are much less irritating and are found in the common foods in a lesser degree of concentration than ordinary sugar. Lactose, or milk sugar, found in milk, also the malt sugars, known scientifically as maltose, have an equal value with cane sugar, but are less sweet and irritating than the granulated sugar.—Good Health.

Flavoring Extract Manufacturers' Association of the United States

THIS association will hold its eleventh annual convention at Springfield, Mass., on July 7, 8, and 9, 1920.

The following warning has been sent out by Charles D. Joyce, president of the association, to the various members.

THIS PRACTICE MUST CEASE

"The officials of this Association are continually receiving complaints and reports from many of its good, law-abiding members, to the effect that there are firms manufacturing and selling flavoring extracts who are apparently disregarding the provisions of the National Prohibition Law and the rules and regulations that have been made for its enforcement, and who are going ahead and selling extracts, particularly *Essence of Jamaica Ginger,* in a manner that is in utter disregard of the regulations and the law.

"These firms are reminded that they are not only placing themselves in a position where they are liable to have their permits to purchase alcohol for any purpose canceled for one whole year (thereby putting them out of business), also liable to fine or possible imprisonment, in addition to having to pay to the Government heavy additional taxes on the alcohol that they have used, and other special taxes (thereby taking from them all profits they may have made), but also placing the Flavoring Extract manufacturing industry of the United States in jeopardy.

"This Association has fought too hard and too long for its very existence to put up at this critical time with any practice on the part of any firm, whether a member of this Association or not, that is jeopardizing the existence of this Association and the extract business at the very moment when the efforts —the almost superhuman efforts— of the Association has been crowned with at least temporary success. It will also be dealt with in other ways sooner than see the results of its hard work uprooted, and its victory lost, because of the misdoings and utter indifference of any firm.

Fruits

Come in Jiffy-Jell

Jiffy-Jell desserts are real-fruit dainties.

Each package contains a bottle of liquid fruit essence.

We crush the fruit, condense the juice and seal it. So you get the fresh-fruit taste.

* * * * *

The flavors are rich and abundant. Jiffy-Jell desserts seem filled with fruit.

Yet the whole dessert costs less than the fruit alone would cost to give an equal flavor.

Millions Enjoy Them

Millions have adopted these new-grade quick gelatine desserts.

Compare them with the old styles. Jiffy-Jell would bring you a new conception of these healthful, economical dainties.

Lime-fruit flavor makes tart, green salad jell. Mint flavor makes mint jell to serve with meats.

10 Flavors in Glass Vials

A Bottle in Each Package

Strawberry	Cherry	Loganberry
Pineapple	Lemon	Raspberry
Orange	Coffee	Lime—Mint

Jiffy Dessert Co.

Waukesha, Wis.

"This Association has circularized its members on the subject of the meaning of the Prohibition Laws, and has explained to them the manner in which they must do business to comply with these laws; and it will not be accepted as an excuse from any member that they did not know the law. And as to those who are not members of this Association it is not only unfortunate for them that they are not of our membership, but it is their duty to know and obey the law.

"The officers of the Association wish to advise the membership at this time with regard to the sale of flavoring extracts, particularly Jamaica Ginger, that if any member of this Association is proven guilty of having wilfully disregarded the law and regulations of the Prohibition officials, and the repeated warnings sent out by this Association against the sale of flavoring extracts for improper purposes, such member will be dealt with by the Executive Committee as severely and unceremoniously as it lies within the power of the Committee so to do. Such member will not only be denied the privileges, advice and assistanee of the Association, and expelled from the organization, but will also be dealt with in other ways.

"As to firms that do not belong to the Association, and who disregard the law, the Executive Committee will take steps to see that they are dealt with, by the government officials who are in a position to reach them and deal with them, aceording to the law.

"ALL of our members should understand, as fortunately the vast majority of them do, that this is an Association to foster and promote the welfare of the industry, not to tear down and destroy it. Those members, and only those members, who can work in harmony with the object named are entitled to mingle in our midst and be one of us.

"Thcrc arc many of our members whose flavoring extract business is their main business, and which business has been built up after a lifetime of effort. These members have their money and all of their worldly goods invested and at stake. They eannot afford to—and as good citizens would not—take chances; and they cannot afford to sit idly by and see others take chances that in the end will not only ruin those others, but ruin them as well.

"We feel that all of our members have been thoroughly advised by circulars as to how they can legitimately conduct their extract business and have been warned to eonduct it in no other way. But if there are any of our members who have not received these circulars and who have not been warned, and who honestly do not know how to live up to the law, we refer them to our General Counsel, Mr. Thomas E. Lannen, 1238 First National Bank Building, Chicago, Illinois, for such information as they may require, which he will be glad to give.

"It does not seem to us that any further circularizing will accomplish any good, and our next move in this matter will be to ACT."

Meeting of American Home Economics Association

The thirteenth annual meeting of the American Home Economics Association will be held at the Antlers Hotel, Colorado Springs, Colorado, from Thursday, June 24 to Tuesday, June 29 inclusive.

This association is devoted to the improvement of conditions in the home, thc Institutional Household and the community at large.

A very elaboratc program has been prepared. Sociological and economic questions will be discussed at length by experts in their particular line

Colgate Packages Artistic

Recently the Metropolitan Museum of Art, Fifth Avenue, New York City, exhibited Colgate packages that were designed from art objects in the museum. This ac-

knowledgment of the artistic work of the containers of these products adds an interesting note to the prestige of the products of this firm.

The exhibit contained the new Florient and Cha-Ming Talc cans and Chelsea and La France Rose soap boxes, each one being shown alongside the object from which the design was taken by the artist.

Above is shown a Florient Talc can with a Japanese textile of ancient weave. It was from this textile that the artist took the motif for the design of the box and all containers of the Florient products.

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY
Chicago *In Business 66 years* U. S. A.

E. PRITCHARD

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BRAND

Canned Foods, Jellies, Preserves,
Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

RIPE OLIVES

(*Continued from page 14*)

further suggested that all ripe olives which have not been processed at a sufficiently high temperature be returned to the packers for immediate reprocessing at a sufficient temperature to insure complete sterilization.

"With few exceptions the olive packers have most heartily fallen in with all suggestions made in the interest of the public saftey and by mutual agrcement entered into by practically all of the packers they are now taking steps to withdraw from the market all ripe olives in glass containers which have not been sterilized at a sufficient temperature. Similar steps are being taken by some of the packers in the case of minced olive relishes in view of the fact that one death due to the consumption of such a product has been reported.

"While concerted aetion to remove ripe olives paeked in tin and processed at a low temperature has not been taken by the packers, the fact that spoilage in tins has so consistently resulted in making a "swell" out of the can eonstitutes a warning to the purchaser which is not often disregarded. There is no reason to anticipate danger from properly packed and processed ripe olives whether they be packed in tin or glass containers."

MAGNETIC FORCES USED

(*Continued from page 24*)

perature remained at 98, regardless of the temperature of the room. He said he discovered that vegetables in the ground were dependent upon the actinic rays from the sun, those rays being invisible and having no light, and that his method was based on this fact. The sun, he says, makes a mysterious earth power vibrate.

"Dr. Cox said the state of the atmosphere in which the vessels, connected with the earth, are kept has no effect upon the products. He said he had experimented with vessels kept in the hot sun and in cold places.

"Dr. Cox said that on his trip from California he connected his wire to a metal pipe, whieh was connected by a steel car to the wheels of the train and thence to the earth. He said that ships could make the earth conneetion merely through the water.

"'Within one year the containers will be available for everybody in every eountry,' said Dr. Cox. 'This invention is a discovery, and it is not going to be used as a means of getting a large fortune. It is not a question of getting the money, as I have already been offered all the backing necessary.' *N. Y. Times.*

THE BUSINESS OUTLOOK

(*Continued from page 21*)

all gateways of transportation in the east. The condition after the middle of the month reached such alarming proportions that governmental aid was sought through the Interstate Commerce Commission in the hope that some means would be found to straighten out the tangle, perhaps through pooling of facilities and so permit the industrial life of the nation to breathe again. It has been estimated by statisticians and traffic men that the value of goods tied up by the congestion of railway facilities has run into the hundreds of millions of dollars. To that cause more than any other is attributed the acute situation of money and credit. Men with years of traffic experience have reported to the government that the basic tronble with transportation is the lack of facilities and declare that approximately $6,000,000,000 will be needed to rehabilitate the railroads of the country and that approximately one-half of that amount must be spent within the next five years. They say they need at least 225,000 freight cars and thousands of engines to cope with the situation, and they declarc that that is an emergency order."

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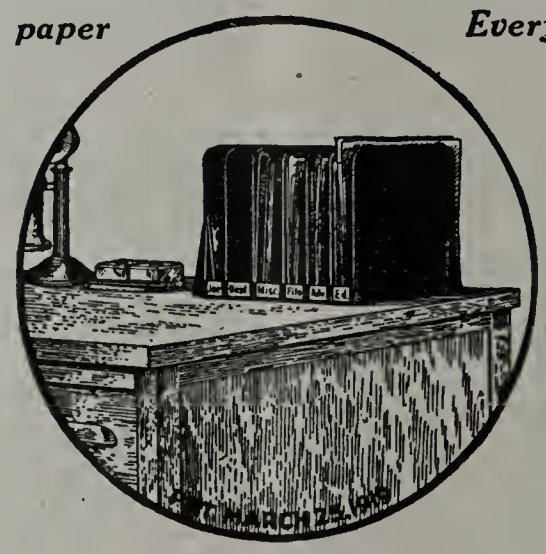
A Desk SYSTEM File will smooth out many of your troubles, especially those caused by congestion of important papers.



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The Passing of Our Fisheries

(*Continued from page 22*)

proaches the danger point. When one considers the vast amount consumed and the important role it plays in the family rations, it at once becomes a national problem.

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Cottonseed Meal As a Human Food

Human Food Supply

Bacteria In Soft Drinks

Progress of Dehydration

Perishability of Eggs

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JULY, 1920

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THE AMERICAN FOOD JOURNAL

Vo'. XV CHICAGO, JULY 1920 No. 7

Cottonseed Meal as a Human Food

By J. E. HALLIGAN

(In Charge of Research and Experimental Department, International Sugar Feed Company, Minneapolis and Memphis

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THE people in the United States are meat eaters. They consume the most of mammals, fowls and fishes, and the amount, kind and variety consumed is somewhat based on the financial condition of the individual family. The poorer classes subsist on less meat than those who are rich.

INFLUENCE OF DIET.—Many people believe that intelligence in people is developed from a diet furnishing ample wholesome meat, but this view is erroneous. To be sure, some of the highest developed civilized nations are meat eaters and so are some of the lowest. The American Indian of colonial days, Gypsies, Maoris, Patagonians, Hottentots, Tibetans, Papuans, Koreans, Abbyssinians, Turkomans, and many of the uncivilized tribes of Africa are meat eaters. The Romans were a race who subsisted principally on barley; the Greeks lived mostly on a diet of cereals, fruit and olive oil; the Japanese subsist on beans, rice and vegetables, with occasional meat from fish, etc.; the sturdy Scotch have been noted oatmeal eaters; the Irish, for at least two centuries, have made potatoes their main food, and the farmers in the northeastern part of the United States, namely, those living in New England, find a diet of baked beans, pie, doughnuts and vegetables, with an occasional supplement of meat when they chance to butcher a cow or hog, satisfactory.

The physical strength and endurance of people are not based on the consumption of meat. The Greek athletes trained on barley, figs and olive oil; the Chinese laborers subsist on a diet of rice, beans, sweet potatoes and garden vegetables; the miners of Chili perform hard work on bread and boiled beans; the messengers of India have accomplished long journeys on a diet of rice; and the Roman army fought with a diet of barley savored with lard.

From the viewpoint of temperament, meat eating does not seem to be a determining factor. The Huns were a fierce living scourge and a roving people who did not hesitate to eat their own horses, yet the Eskimos are a most peaceful race and consume about 10 pounds of meat per meal.

If we glance into the animal kingdom we learn that the lion and tiger live on flesh, and the gorilla, whom all animals fear, subsists on fruit. The rhinoceros and elephant live on leaves, grass, etc., yet the household cat and dog are meat eaters. The wild boar is a root eater; the moose gathers food from twigs, lichens and grass; while the toad and mockingbird eat insects. The most useful animals to civilized mankind are the horse, cattle, sheep, etc., and they are not meat eaters.

COTTONSEED MEAL AS A MEAT SUBSTITUTE.—Meat is perhaps the most expensive food in the civilized world. The increasing population and the decrease in cattle, sheep and hogs may compel some of the poorer people to consume protein food from other sources, and it seems that cottonseed meal should find a useful place as a human food.

The protein in cottonseed meal is much cheaper than in meat, and it has the advantage of being within reach of the poorer classes. It is a question if some people consume enough meat, at the ruling prices, to satisfy the protein or flesh-forming requirements of their bodies. Statistics show that in some of the civilized countries the diet of the poorer classes has affected their physiques, and they are not as rugged as their richer contemporaries of the same nationalities. According to Atwater, 125 grams of protein are required per day for moderate work by the adult man. Negro families in the South subsist on as low as 16 grams of protein per man per day, and many of them do not consume over 64 grams when their diet consists principally of cornmeal and fat meat. Some poor families in New York average about 93 grams of protein daily per man; laborers in Pittsburgh consume 80 grams; Mexican families in New Mexico, 94 grams, and Italian mechanics in Naples, 76 grams. An addition of cottonseed meal to the diet of many laboring people in this and other countries would probably meet their bodies' needs. It seems that cottonseed meal could profitably be included to partially replace meat and diets, or to enforce meat in protein-deficient diets.

KEEPING QUALITIES.—In order to keep meat in fit condition for human consumption it must be kept in refrigeration all or most of the time. This process of storage is expensive and sometimes not conve-

nient. Cottonseed meal and flour will keep indefinitely in dry storage, the changes in temperature having no effect on their condition. Meat is more relished and more palatable when it is allowed to hang for two weeks to six months than when fresh. Cottonseed meal is ready and fit for the table as soon as it is manufactured.

Use of Cottonseed Meal as Human Food.—Since 1905 cottonseed meal has been used to a limited extent as a human food in Texas and other parts of the South.* In Texas the meal is specially prepared into flour by eliminating the hulls as completely as possible and grinding the meal to a fine powder. The flour should be of bright yellow color, free from hulls, lint and rancidity, and possess a sweet taste and agreeable (approaching nutty) odor. Cottonseed meal is as good as cottonseed flour when free from hulls, lint and rancidity and of high quality. Dark colored meal, damaged meal, insect infested meal and low grade meals of any character should not be used for human consumption.

Consumption of Cottonseed Flour.—The flour contains more protein and fat and less crude fiber and nitrogen-free extract than cottonseed meal.

COMPOSITION OF COTTONSEED FLOUR AND MEAL

	Protein	Fat	Fiber	Nitrogen free extract	Water	Ash
Flour	50.16	10.96	3.92	22.96	6.25	5.76
Meal	43.12	8.92	8.08	25.69	7.62	6.57

Bakery Products.—Most any bakery product which is possible with other flours can be made from cottonseed flour. Cottonseed bread, cottonseed rolls, cottonseed steamed bread, cottonseed ginger bread, cottonseed ginger snaps, cottonseed doughnuts, cottonseed plum pudding and cottonseed cake are bakery products made in Texas.

The feature of the above analysis is the predominance of protein content in those products made from cottonseed flour over those originating from wheat flour. The cottonseed bread contains about 50 per cent, more protein than white wheat bread: the cottonseed ginger bread is about three times richer in protein than common ginger bread, and the cottonseed ginger snaps about two and one-half times more valuable from a protein standpoint than ordinary ginger snaps. The fat contents of the cottonseed bakery products are also usually more than in bakery products from wheat flour.

The table which follows shows the composition of breads made from mixtures of cottonseed meal with wheat flour and cornmeal as compared to the composition of other popular foods:

Cottonseed flour is about four times richer in protein than eggs, three times richer than beef loin and two times richer than cheese. It contains about as much fat as eggs. It is not advisable to use cottonseed flour alone, because it is a heavy, rich product which requires association of other products like wheat flour to produce palatable, light and agreeable food. The cottonseed meal bread which is the first item in the table was made from a mixture of wheat flour and cottonseed flour, probably in the proportion of four parts of wheat flour to one part of cottonseed flour. This bread is richer in protein than eggs, and almost as rich as beef loin.

In the experiments conducted by the Texas Station, bread made from two parts of cornmeal and one part of cottonseed meal was not as palatable as when a mixture of four parts of cornmeal and one part of cottonseed meal was used.

Breads and bakery products made from mixtures of cottonseed flour and wheat flour, or cottonseed flour and cornmeal, are richer in protein and fat than similar products made without the employment of cottonseed flour, because cottonseed flour contains about five times as much protein and ten times as much fat as wheat flour, and about six times as much protein and four times as much fat as cornmeal. The nitrogen-free extract is less and the fiber more in cottonseed flour than in wheat flour and cornmeal. The amount of fiber in cottonseed flour is not objectionable.

Cottonseed Flour is a Meat Substitute.—It is readily seen from the composition of cottonseed flour that it is essentially a protein food. Meat is a protein food and valued from the protein content. Hence, cottonseed flour is a meat substitute. Cottonseed flour should not be considered as a flour substitute because it does not predominate in carbohydrates, and besides it does not contain any starch.

Cottonseed Flour Entirely Edible.—The table which follows has been compiled to show the amounts edible in a few familiar foods:

The average non-edible portion in the meats enumerated is 14.4 per cent. and in dressed fresh fish, 37.9 per cent. Eggs contain 11 per cent. refuse. Cottonseed flour is entirely edible, there being no refuse nor waste. The meats average 46 per cent. water; the dressed fresh fish 46.9 per cent; the cottonseed flour would scarcely ever contain over 10 per cent if properly stored, and usually less. The protein content of meat averages 14.5 per cent, fresh fish 11.5 per cent, and cottonseed flour about 50 per cent. There is on the average 22.6 per cent fat in meat, 2.8 per cent in fresh fish and 11 per cent in cottonseed flour but cottonseed flour contains about 23 per cent nitrogen free extract which would have considerable food value.

Mineral Matter.—Although the question of supplying mineral matter is often neglected, because of the small amounts required to maintain the body in a normal condition, yet it is very important that an ample supply of the proper mineral elements be consumed. In the manufacture of many human foods, such as the cereals, most of the mineral matter is lost, and these products comprise about 30 per cent of the human diet; the deficiency of mineral matter is sometimes serious. Wheat flour only contains 0.5 per cent of mineral matter; cornmeal 1.0 per cent, rice 0.5 per cent, buckwheat flour 0.9 per cent, and pearled barley 1.1 per cent. The meats average but 1.4 per cent and fresh fish 0.8 per cent of mineral matter. It is just as important that the body be supplied with the proper amount of mineral matter as of protein, fat and carbohydrate. It is seen that meats, fresh fish and cereals are deficient in mineral matter. About 85 per cent of the bony structure of the adult is composed of calcium and phosphorous. Mineral elements are necessary in all the vital processes and parts of the body. When people are on a meat diet, the mineral matter is chanced to be supplied from other sources, such as fruits and vegetables, and if sufficient of these latter foods are not consumed to furnish the required mineral matter, the equilibrium of the body is disturbed and manifested sometimes in serious disorders. Cottonseed flour carries about 5.8 per cent mineral matter, and is therefore a desirable human food from the min-

*Much of the data which follows relative to cottonseed meal and cottonseed flour as human food is from the work of the Texas Agricultural Experiment Station, Bulletins 128 and 163

eral matter standpoint, as well as from the protein standpoint.

The estimated amounts of mineral matter required per day by an adult man doing moderate muscular work are set forth in the following table. This estimation is by Lankworthy:

Phosphoric acid	3 to 4	grams
Sulphuric acid	2 to 3.5	"
Potassium oxide	2 to 3	"
Sodium oxide	4 to 6	
Calcium oxide	0.7 to 1	gram
Magnesium oxide	0.3 to 0.5	"
Iron	0.006 to 0.012	"
Chlorine	6 to 8	grams

Acids are formed in protein metabolism, and baseforming elements like sodium, calcium, magnesium, are essential to neutralize these acids and keep the blood and tissues in a normal alkaline condition.

The amount of phosphoric acid required by the body is comparatively large. Cottonseed meal is a rich source of phosphorous food, as it contains about 2.8 per cent of phosphoric acid. It also averages about 1.5 per cent in potassium oxide. As a mineral source of food, cottonseed meal is worthy of consideration.

Cottonseed meal may be found useful in place of other foods for people suffering with certain body disturbances, for it contains no starch and may be valuable in dicts for diabetic patients.

AMOUNT TO CONSUME.—Protein is indispensable to the human body, as it enters into the makeup and functions of so many parts and organisms. It is essential that the body be supplied sufficiently with protein, but overmuch is not beneficial. Cottonseed flour is a rich protein food, and judgment should be used in its use. When meat is a part of the diet, cottonseed meal should not be used unless the protein requirement is deficient and then only in amounts to meet the deficiency. It is not recommended that cottonseed meal or flour should be used continuously in place of meat, because there has not been enough data secured along this line to warrant absolute conclusion, but it may be used for periods in place of meat, or in conjunction with meat. About 5 ounces of cottonseed meal will take the place of meat for the average adult, but in experiments at the Texas Station the subjects' requirements were satisfied with slightly less than 2 ounces per day, supplemented with one-half gallon of milk and enough cornmeal (8 ounces) to make suitable bread.

Two ounces of cottonseed meal is equivalent to about four ounces of meat and should not cause any body disturbance. The cottonseed meal should never be used by itself, for it is too concentrated, but it may be safely and agreeably consumed in mixtures of cornmeal and wheat flour in the proportions of one part of cottonseed meal to four parts of cornmeal, or wheat flour. If other flours are employed, the same relative ratio would be suitable.

Cottonseed meal may not agree with some individuals any more than eggs, milk and other palatable and nourishing foods prove unsatisfactory to certain persons. Atwater says, "different persons are differently constituted with respect to the chemical changes which their food undergoes in digestion and the effect produced, so that it may literally be true that one man's meat is another man's poison. Milk is for most people a very wholesome, di-

COMPOSITION OF COTTONSEED BAKERY PRODUCTS

	Protein	Fat	Fiber	Water	Ash	Nitrogen Free extract
Cottonseed bread	14.13	4.83	1.95	24.98	2.11	51.98
Cottonseed steamed bread	13.48	7.80	2.13	40.00	3.00	33.59
Cottonseed ginger bread	17.19	11.63	2.60	22.80	2.80	42.98
Cottonseed ginger snaps	16.32	14.70	2.71	6.50	2.13	57.64
Cottonseed biscuits	18.52	11.42	3.05	11.23	4.25	51.53
White wheat bread (average)	9.20	1.30	1.51	35.30	1.10	53.10
Ginger bread (average)	5.80	9.00	0.90	18.80	2.90	63.50
Ginger snaps (average)	6.50	8.60	0.70	6.30	2.60	76.00

COMPOSITION OF COTTONSEED MEAL BREADS, ETC.

	Protein	Fat	Fiber	Nitrogen free extract	Water	Ash
Cottonseed meal bread	14.13	4.85	1.95	51.98	24.98	2.11
Cottonseed meal corn bread, 33% cottonseed meal	10.25	2.13	1.84	31.29	51.53	2.97
Cottonseed meal corn bread, 20% cottonseed meal	8.57	2.24	1.60	34.55	50.14	2.91
Cottonseed meal corn bread, 20% cottonseed meal	8.60	2.34	1.12	34.14	50.41	2.98
Wheat bread, average	9.20	1.30	1.51	52.10	35.30	1.10
Corn bread	4.31	1.33	0.70	37.83	55.59	1.90
Beef loin	16.40	16.90	...	....	61.30	0.90
Beef flank	19.60	21.10	...	....	59.30	0.90
Mutton, leg	18.70	17.50	...	....	63.20	1.00
Eggs	13.20	12.00	...	....	73.30	0.60
Cheese	25.90	33.70	...	2.40	34.20	3.80
Cottonseed meal-cornmeal. mixture (calc.)	17.17	4.41	1.76	65.32	9.39	1.95
Cornmeal	8.93	2.77	1.22	75.91	10.17	1.00
Cottonseed meal-wheat flour mixture (calc.)	19.15	2.99	1.02	64.66	10.85	1.63
Wheat flour	11.40	1.00	0.30	75.10	12.00	0.60
Cottonseed flour	50.16	10.96	3.92	22.95	6.25	5.76
Cottonseed meal	43.12	8.92	8.08	25.69	7.62	6.57

COMPOSITION OF MEATS

	Non-edible	Water	Protein	Fat	Ash
Beef-fresh:					
Chuck, ribs	16.3	52.6	15.0	14.3	0.6
Loin, medium	13.3	52.5	15.6	16.6	0.7
Ribs	20.8	43.8	13.5	20.0	0.5
Round, medium	7.2	60.7	18.4	12.2	0.8
Shoulder and clod	16.4	56.8	15.9	9.3	0.7
Beef—dried and smoked	4.7	53.7	25.6	6.6	5.5
Veal:					
Cutlets, round	3.4	68.3	19.5	7.1	0.8
Leg	14.2	60.1	15.0	7.5	0.7
Mutton:					
Leg	18.4	51.2	14.6	14.0	0.6
Loin	16.0	42.0	13.1	26.9	0.5
Pork—fresh:					
Loin chops	19.7	41.8	13.0	23.0	0.6
Ham	10.7	48.0	13.1	24.6	0.6
Pork—salted and smoked:					
Bacon	7.7	17.4	8.8	59.1	3.1
Ham	13.6	34.8	13.8	31.7	3.2
Salt, fat	....	7.9	1.8	81.9	2.9
Poultry:					
Fowl	25.9	47.1	13.3	11.7	0.5
Turkey	22.7	42.4	15.6	17.5	0.6
Total average	14.4	46.0	14.5	22.6	1.4
Cottonseed flour	none	6.3	50.2	11.0	5.8

COMPOSITION OF FISH DRESSED FOR MARKET

	Non-edible	Water	Protein	Fat	Carbohydrates	Ash
Fresh Fish:						
Black bass	46.7	41.9	10.3	0.5	...	0.6
Cod	29.9	58.5	10.6	0.2	...	0.8
Mackerel	40.7	43.7	11.4	3.5	...	0.7
Perch	54.6	34.4	8.7	1.8	...	0.5
Pickerel	35.9	51.1	11.9	0.2	...	0.9
Pike	30.5	55.4	13.0	0.4	...	0.7
Salmon	23.8	51.2	14.6	9.5	...	0.9
Trout, brook	37.9	48.4	11.7	1.3	...	0.7
Trout, lake	35.2	45.0	12.4	6.6	...	0.8
Whitefish	43.6	39.4	10.3	3.6	...	0.9
Average	37.9	46.9	11.5	2.8	...	0.8
Preserved Fish—Cod, salt	24.9	40.2	16.0	0.4	...	18.5 salt
Herring, smoked	44.4	19.2	20.5	8.8	...	7.4
Canned Fish:						
Caviare	...	38.1	30.0	19.7	7.6	4.6
Salmon	...	63.5	21.8	12.1	...	2.6
Sardines	5.0	53.6	23.7	12.1	...	5.3
Shellfish:						
Oysters	...	88.3	6.0	1.3	3.3	1.1
Clams	...	80.8	10.6	1.1	5.2	2.3
Lobsters	61.7	30.7	5.9	0.7	0.2	0.8
Shrimps	...	70.8	25.4	1.0	0.2	2.6
Cottonseed flour	none	6.3	50.2	11.0	...	5.8

COMPOSITION OF CEREAL PRODUCTS

Product—	Water Per cent	Protein Per cent	Fat Per cent	Carbohydrates Per cent	Fiber Per cent	Ash Per cent
Rice	12.3	6.9	0.3	79.7	0.3	0.5
Pearled barley	11.5	8.5	1.1	77.5	0.3	1.1
Oatmeal, raw	7.3	16.1	7.2	66.6	0.9	1.9
Graham flour	11.3	13.3	2.2	69.5	1.9	1.8
Patent roller process flour	12.0	11.4	1.0	74.8	0.3	0.5
Cornmeal, bolted	12.5	9.2	1.9	74.4	1.0	1.0
Buckwheat flour	13.6	6.4	1.2	77.5	0.4	0.9

COMPOSITION OF VARIOUS FLOURS*

Kind of flour or meal—	Water Per cent	Ash Per cent	Fat Per cent	Fiber Per cent	Protein Per cent	Carbohydrates Per cent
†Soy bean	6.14	5.24	20.71	1.72	39.56	26.63
‡Soy bean	6.10	6.20	4.50	2.05	47.30	33.85
Wheat	12.00	0.45	1.00	0.20	11.00	75.35
Cornmeal	10.00	0.90	2.70	0.80	8.50	77.10
Rye	9.00	1.10	1.50	0.65	12.00	75.85
Graham	9.60	1.80	2.20	1.90	12.60	71.90
Whole wheat	10.90	1.05	2.00	1.00	12.00	73.05
Rice	12.30	0.40	0.30	0.20	8.00	78.80
Buckwheat	13.60	0.90	1.20	0.40	6.40	77.50
Cottonseed flour	6.25	5.76	10.96	3.92	50.16	22.95

gestible and nutritious food, but there are persons who are made ill by drinking it and they should avoid milk. The writer knows a boy who is made seriously ill by eating eggs. A small piece of sweet cake in which eggs have been used will cause him serious trouble. The sickness is nature's evidence that eggs for him are an unfit article of food. Some persons have to avoid strawberries. Indeed, cases in which the most wholesome kinds of foods are hurtful to individual persons are, unfortunately, numerous. Every man must learn from his own experience what food agrees with him and what does not.

The protein digestibities of cottonseed meal and cottonseed flour are about the same as legumes (peas and beans), about eight-tenths that in meat and about nine-tenths that of cereals. The digestibility of the fat of cottonseed meal and of cottonseed flour exceeded that of meat, cereals and legumes. The carbohydrates in cottonseed meal were 44.5 per cent digestible and in cottonseed flour 58.9 per cent digestible.

One pound of digestible protein in cottonseed meal is about 15 times cheaper than in meat and about 20 times cheaper than in eggs.

The amount of nutrients digested by man from 100 parts consumed are shown in the table.

Cottonseed meal and cottonseed flour have about three times as much digestible protein as eggs; twice that of beef flank and mutton. When cottonseed meal is mixed with wheat flour and made into bakery products the amount of protein digested depends upon the quantity of water present; the products in this work ranged from 6 per cent to 50 per cent in water and 16.52 to 8.8 parts digested of protein. Compared with beef loin and mutton, the amount of protein digested in cottonseed meal-wheat bread carries from about one-half less to almost an equal amount compared to eggs, one-third less to one-third more. Cornmeal has about one-fifth less protein digested than wheat flour; therefore the products made from cottonseed meal with cornmeal and wheat flour will show proportionate variations in digestible protein. The comparative values of digestible proteins from different foods are not known, but it is said that the digestible protein of the legumes (peas and beans) is as valuable as the digestible protein from meats. The carbohydrate digestible parts have not been discussed, because cottonseed meal is not to be considered as taking the place of wheat flour, corn meal and other carbohydrate foods.

*Bureau of Chemistry, U. S. D. A. and other sources.
†Flour made from whole soy bean.
‡Flour made from soy bean cake.

PERCENTAGE OF NUTRIENTS DIGESTED—COTTONSEED MEAL AND MEAT

Man No.		Protein	Fat	Carbohydrates	Carbohydrates and fats	Carbohydrates when fats are assumed 95% digested
1	Canned chicken loaf	99.3	100.0	...	...	...
2	Canned chicken loaf	93.9	99.3	...	...	...
1	Cottonseed meal	80.2	100.0	56.7	79.0	78.4
2	Cottonseed meal	74.7	100.0	25.5	58.8	48.0
3	Cottonseed meal	77.9	100.0	51.2	72.3	65.4
1	Cottonseed flour	79.7	100.0	49.0	70.1	61.2
2	Cottonseed flour	79.2	100.0	68.7	85.8	79.4
	Average for meat	96.6	99.7	...	...	...
	Average for cottonseed meal	77.6	100.0	44.5	70.1	63.9
	Average for cottonseed flour	79.5	100.0	58.9	78.0	70.3
	Average digestibility of cereals	85.0	90.0	98.0	...	...
	Average digestibility of legumes	78.0	90.0	97.0	...	...
	Cottonseed meal digested by dogs (Mendel and Fine)	71.6	...	...	...	...
	Cottonseed meal digested by animals (ruminants)	88.4	93.3	60.6	...	...
	Total food of average mixed diet (Atwater)	92.0	95.0	98.0	...	...

Digestibility of Cottonseed Meal and Cottonseed Flour.—The Texas Station conducted digestion experiments with men to determine the digestibility of cottonseed meal and flour. The results of this work are found in the following table:

AMOUNT OF NUTRIENTS DIGESTED BY MAN FROM ONE HUNDRED PARTS EATEN

	Protein digester	Fat digested (including carbohydrates divided by 2.2)	Approximate relative full value
Cottonseed meal	36.94	18.51	37
Cottonseed flour	39.33	18.72	38
Eggs	12.80	11.40	18
Beef flank	19.01	20.04	30
Beef loin	15.91	16.05	24
Mutton (leg)	18.14	16.62	26
Cottonseed meal-corn bread	7.91	18.42	22
Wheat bread (average)	7.82	25.50	30
Corn bread (cornmeal, water and salt)	3.66	18.37	20
Cottonseed meal-cornmeal (20% cottonseed meal)	13.95	32.22	39
Cornmeal	7.59	36.85	41
Cottonseed meal-wheat flour (20% cottonseed meal)	15.63	30.14	38
Wheat flour	9.69	34.50	40
Cottonseed meal and wheat bakery products:			
50% water (minimum)	8.80	16.99	21
6% water (maximum)	16.52	31.93	40

Cottonseed meal contains no starch, and probably the digestible carbohydrates of this product are not as valuable as an equal quantity from cereal products. However, in cottonseed meal breads most of the carbohydrates are derived from wheat flour and cornmeal.

The fat and fat-forming nutrients in cottonseed meal and cottonseed flour compare favorably to beef loin, beef flank and mutton, and are much higher than eggs. The cottonseed meal breads do not suffer by comparison in these constituents with beef, mutton and eggs, as the breads having low moisture contain about twice as much as beef loin and mutton, and those of high water content about equal these products.

The fuel values of cottonseed meal and cottonseed flour are about twice as much as eggs, about one-half more than beef loin and mutton, and about one-quarter more than beef flank. The high water content of cottonseed meal breads are slightly higher in fuel value than eggs, and the low-moisture cottonseed meal breads are more than twice as high. Compared to mutton and beef loin, the range of fuel values is from slightly less to considerable more. The fuel values of wheat flour and of cornmeal are as high as that of the low water content cottonseed meal bread, and wheat bread is

equal to beef flank, but this is due to the large amount of carbohydrates in wheat flour and cornmeal. Carbohydrates are essential for the body and so is protein, but carbohydrates cannot take the place of protein and cannot form body tissue (nitrogenous substances). The carbohydrates and fats furnish fuel to keep the body warm, produce energy and aid in the production of fatty tissue. The proteins are flesh formers and are substances which help in the formation of lean meat, skin, muscles, ligaments, nails and hair, and when there is a deficieney of fats and carbohydrates, they are used to perform the functions of fats and carbohydrates in furnishing fuel and prodneing energy.

In the experiments of the Texas Station with cottonseed meal and cottonseed flour, the subjects remained in good health, although one was removed because of constipation. When meat was removed and cottonseed meal substituted there was no loss in flesh. The subjects received about 50 grams (less than 2 ounces) cottonseed meal, ½ gallon milk, and about 7 ounces of corn meal daily. There was a slight gain of nitrogen in the body of each subject, showing that the diet furnished was sufficient to meet the protein requirements. Most of the nitrogen excreted by the body is voided by the urine. The difference between the nitrogen digested and that voided shows the amount regained. The following table, while not including the solid excrement, serves to show that sufficient protein was consumed by the subjects:

NITROGEN DIGESTED AND VOIDED IN URINE, IN GRAMS

	Day	Nitrogen digested	Nitrogen voided	Balance
Man 1, experiment 1, period 1	1	...	11.7	
Man 1, experiment 1, period 2	2	...	14.0	
Total		34.3	25.7	+8.6
Man 1, experiment 2, period 2	1	...	9.7	
Man 1, experiment 2, period 2	2	...	12.0	
Total		25.2	21.7	+3.5
Man 2, experiment 2, period 1	1	...	13.8	
Man 2, experiment 2, period 1	2	...	14.3	
Total		32.3	28.1	+4.2
Man 2, experiment 2, period 2	1	...	14.5	
Man 2, experiment 2, period 2	2	...	9.3	
Total		31.8	23.8	+8.0
Man 3, experiment 2, period 2	1	...	15.0	
Man 3, experiment 2, period 2	2	...	13.7	
Total		29.7	28.7	+1.0
Man 1, experiment 3	1	...	10.0	
Man 1, experiment 3	2	...	11.5	
Total		27.4	21.5	+5.9
Man 2, experiment 3	1	...	9,2	
Man 2, experiment 3	2	...	9.5	
Total		32.2	18.7	+13.5

"Sugarspuds" Alias "Sweet Potatoes" Arrive to Meet the Sugar Shortage

By ANNA STANLEY
Domestic Scientist, New York Tribune

THERE are sweet potatoes as such no more. They are "sugarspuds" from now heneeforth. Along with this fact comes the news that these native tubers are to be with us all the time, not only for a few weeks now and then, so that when you have just become accustomed to their appearance on the table they disappear until the next season. New varieties have been developed along with improved methods of curing and storing and the combination bids fair to extend the popularity of the sweet potato so that the Irish cousin will lose her place as the belle of the dinner table.

LIKE CORN, THEY ARE ABORIGINES

The "sugarspud" is one of our distinctly American foods, and it seems rather remiss on our part to have been so slow in developing this wonderful food. The colonists found them here in abundance when they came and they were a very valuable asset in the revolutionary war. There is a story that General Marion, the "Swamp Fox," of South Carolina, maintained his men for months on sweet potatoes. And in 1812 General Jackson's men, in the campaign against the British in Louisiana had little food but sweet potatoes. An English general, in reporting back home as to the morale of the American army, said that they could never be conquered, because of their determination and because they could always raise sweet potatoes, on whieh food they could fight indefinitely.

There could be no better time than the present to extend the use of this food in our diet. White potatoes are now selling for a ridiculously high price, so begin your sweet potato campaign. Sugar too is scaree and exorbitant in price. It will be needed for preserving and canning soon, and a more abundant use of this sweet vegetable will aid in the solution of the sugar problem. The children, especially, whose "sweet tooth" makes constant demands, may crave less candies and sweet desserts if a liberal amount of this food is placed before them.

A CHEAP SOURCE OF ENERGY

You will find that they give you more energy value at a lower price than almost any kind of fresh vegetables. The food value of a serving of sweet potatoes compared with the Irish potato, turnip and squash might be noted. It is higher in fat, carbohydrate and calorifie value than any of the others. The Irish potato alone surpasses it in protein.

FOOD VALUE OF AN INDIVIDUAL SERVING
(4 Ounces or 113 Grams) of Several Vegetables

Name—	Protein gms.	Fat gms.	Carbodyhrates gms.	Calories
"Sugarspuds"	1.8	0.7	27.4	31
White Potatoes...	2.2	0.1	18.4	31
Squash	1.4	0.5	9	21
Turnips	1.3	0.2	8.1	10

Recent analyses of pre-cooked vegetable flours (including pea, bean, squash, white and sweet potatoes and standard spring wheat for comparison) showed that the flour made from sweet potatoes contained less moisture, more carbohydrate and more calories a pound than any of the flours analyzed. It contains more sugar (28 per cent) than any except the squash flour (41.9 per cent) whereas other flours show only from 2 to 5 per cent, with none of course in white flour.

More Efficiency Needed

Federal Trade Commission Advises Improved Methods in Handling Foods

THE Federal Trade Commission has been investigating the marketing processes for all kinds of foods and has come to the conclusion that there are many things that can be improved to the good of producers, dealers and consumers.

The report does not mention anything about profiteering. It has been discovered that the railroads have something to do with the high cost of distribution, that in other things the packing and shipping on the part of the producer is more to blame, more costly than anything for which the dealer, either wholesale or retail, is to blame.

Improved marketing facilities and processes at the great consuming centers are proposed by the commission as a long step towards the lowering of present day living costs.

In its report on "The Wholesale Marketing of Food," made public recently, one of the series in the food investigation ordered by the President, the Commission points out that costs of food distribution are far too high and that the elimination of unnecessary costs and losses would not only "act as a counter agent in checking disparity in food prices and money incomes, but would strengthen the nation's position in its competition for world trade."

The report sets forth the growing feeling not only among consumers but even among producers and dealers that improved marketing facilities and processes are urgently needed. "The improvement of food should be made most direct from field and factory to table."

Careless Handling of Food

It is shown how losses accumulate in the careless and useless handling of foods, in the inefficient packing and transporting to markets, through scattered railway terminals, from markets badly located and poorly equipped, and because of inadequate storage and delivery facilities. "Facilities adequate to every need should be provided for the receiving, handling, storing, preserving and delivering of foods. Not only must efficient marketing facilities be provided, but marketing processes must be guided."

An interesting feature of the report is its extended and detailed survey of the New York City markets, and its briefer surveys of several other representative markets of the country, including Chicago, Pittsburgh, New Orleans and Los Angeles. A study is also made of the principal European wholesale markets.

The report points out that the rapid rise in food prices in recent years is not so significant as "that the money incomes of large numbers have fallen far short of a proportional increase. The weekly wage of union-organized labor in 1918 brought but 77 per cent (Department of Labor) as much food as in 1913. But this comparison is for the wages of union labor. The larger number of service incomes do not fall within this organized group and are much slower to respond to the pressure of a higher cost of living. Moreover, these incomes are for the same reason usually less in amount. It follows that for very large numbers of people receiving relatively small incomes, a week's wage in 1918 was purchasing much less than 77 per cent of the food it bought in 1913."

But food prices are also of interest to the community and to the nation from the trading point of view. "Food absorbs 38.2 per cent of the average American household's income. It therefore constitutes no inconsiderable part of the wage and salary cost in all production. Of two communities whose products enter the same markets otherwise equally, that one which supplies its working people with food at a lower community cost either will pay its workers a higher wage or will have a marked advantage in underselling the other through lower production costs. Both results may in some measure follow.

"A wise government policy towards the food industries may lower production and distribution costs together with the final sales price without proportionately increasing governmental costs, thus reducing the national cost of food. It is the urgent need and proposed content of such a policy towards wholesaling to which this report seeks to direct public attention."

Marketing Facilities

It is shown in this report "that careless handling, improperly equipped cars, delays in moving and exposure, while foods are in railway transit to market, are the causes of large and unnecessary losses and expenses to dealers and shippers; that railway terminals are usually scattered, that they are not properly equipped with cold, heated and dry storage to prevent deterioration before perishables can be removed, and that often they lack facilities for the quick and safe handling of foods."

It is also shown in this report "that buildings and other facilities for the marketing of perishables in the vast majority of wholesale receiving centers are entirely inadequate, are generally badly located with reference to terminals, storage and retailers, are often congested, and are invariably ill-adapted in construction and arrangement to economical marketing. In several cities running about 100,000 in population public storage facilities were found to be entirely lacking and in others inadequate. Where storage is sufficient it is often far from both terminals and wholesale centers.

"As a consequence of the location of markets with reference to terminals, storage and retails, a large amount of carting is necessary. Congested, and poorly paved streets, long distances, ill-equipped conveyances all make for useless expense and large losses of foods through deterioration.

"If the wholesaling of foods is to be placed on an efficient basis, the first and most obvious requirement is that respecting physical equipment. Facilities adequate to every need should be provided for the receiving, handling, storing, preserving, buying, selling and delivering of specified foods."

Work of American Red Cross

Twenty-five million pounds of food, medicines and clothing passed through the American Red Cross warehouses in the Balkans from January 1, 1918, to September 1, 1919. These supplies were valued at more than $10,000,000. Every ounce of this material came from the American people. Of the 40,000,000 souls in the Balkan states, more than 10,000,000 were beneficiaries of this bounty.

Human Food Supply

From the Address by Walter J. Sears, President National Canners' Association, at the National Wholesale Grocers' Convention at Colorado Springs

THIS country for more than three hundred years, reveling in a surfeit of plenty, is now facing a threatened shortage of human foods. It would seem, therefore, that for a few moments we might give our thought to some of the considerations underlying an adequate supply of these foods. * * *

Food Production

Since the development of our industrial era, which some economists call the age of the machine, it has been necessary to maintain a balance of production as between the producers of food and the non-producers. For many nations this has been a stark and fearsome necessity. Nations like England, Germany, Austria and Italy have had to depend for a large part of their food supply upon other nations. In short, the industrial nations have lived upon the agricultural nations, and the primary question for them has been, and must continue to be, to make such an exchange of the manufactured products of the one class of nations as will make it possible to secure the needed food supplies from the other class of nations. Some thoughtful man has said that all the wars of the past five hundred years can be traced to this economic necessity. Certainly it is that this necessity was one of the compelling causes for the world war, and it is one of the mournful commentaries upon this war that instead of lessening this economic necessity, it has greatly magnified it. * * *

Probable Food Shortage

As to food production in this country, it is difficult to find satisfactory data, but the shortage in all essential foods over the production of the last three years will be marked, ranging from 20 to 30 per cent. If the yield of wheat should be 25 per cent less than last year, this would mean a shortage of some two hundred and twenty-five million bushels. If the corn crop should be 20 per cent less than last year, it would mean a shortage of five hundred and eighty million bushels.

The economic conditions which have taken the labor supply from the farms and caused a curtailment of production may or may not find correction by the natural action and reaction of supply and demand for products and for labor. Every prudent consideration, however, should admonish us to take such intelligent steps as will restore the balance between food production and non-food production. The restoration will depend upon a number of factors, the full significance of which I cannot stop to consider. These are as follows: First—the producer will have to charge more for his products if he is to pay more for labor, and he will have to pay more for labor if he is to compete with the industrial enterprises which now command it. Second — the food producer must also receive a generous supply of bank credit for his operations. Third—we must come to place a new valuation upon the sources of our food supply, i. e., the rural life must be made equally as attractive and interesting as the city life for the young as well as for the old. Fourth—we must bring to food production every resource of science and organized efficiency to the end that those who engage in it shall achieve prosperity and a reasonable measure of success. Fifth—our means of national transportation of foods must be made adequate. Sixth—the expanding system of tenancy must be replaced by ownership in those who cultivate the land. Seventh—as an immediate need the modification of the present system of taxation which is checking the incentive and initiative to production.

As a part of the general plan to secure not only a maximum production of food, but the production of suitable food, the National Canners' Association has established a bureau for the study of the conservation of raw products. This bureau has been placed in charge of Prof. C. G. Woodbury, who has just resigned as director of Purdue University Agricultural Experiment Station. Professor Woodbury is a scientist of national reputation, who will organize a department which shall study the fundamental problems of seed selection, soil conservation and crop cultivation, as well as plant diseases.

Preparation of Food

After the food is produced it must be prepared for human consumption. * * * It remained for a Frenchman, Nicholas Appert, to devise in 1810 a method of conserving foods in glass containers, and for an Anglo-American, Thomas Kensett, in 1819, to devise a method for preserving foods in tin containers. Both methods involved the application of heat developed either by steam or boiling water.

The race resorted to other methods of preserving foods such as refrigeration, certain types of fermentation, packing in oil, fats, sugar and salt, but none of them have proved as efficient as the several methods of cooking. These discoveries and inventions were incalculably important. They meant that perishable food, i. e., food produced by nature during the period of her abundant plenty would be conserved for future use. What this has meant in the conservation of food supply is only partly demonstrated when it is known that the canneries in this country are producing annually some five billion containers of food. The importance of this vital fact is further magnified when it is realized that these foods may be transported, without injury, into every land and clime on the earth's surface.

Efforts of Canners

The canners are deeply in earnest in the preparation of foods that are absolutely wholesome. They have not stopped to count the cost in obtaining methods and processes which will absolutely guarantee such foods. Already they have expended more than three-quarters of a million dollars in this work, and they will not rest from their labors until every problem affecting the wholesomeness of their products has been solved.

Realizing the serious nature of these problems and desiring to afford the people the fullest protection, the Association has, after full and careful deliberation, organized an inspection service in charge of scientific men, the whole purpose and aim of which service is to prepare wholesome foods.

The science of bacteriology gave birth to another field of study and investigation out of which has been developed what is sometimes called a science, i. e., the science of sanitation. The revelations made by the bacteriologists drove home the conviction that cleanliness was not only next to Godliness but that it was next to human health. It was found

that the natural habitat of many bacteria was filth. Therefore, if one desired to be free of these harmful germs, one must be clean. Therefore, the canner could not place his entire dependence upon the scientific process of his foods in closed containers. His factory, his equipment, his utensils, his employes must be clean. Therefore, men began to form new standards of cleanliness for canneries and out of these new conceptions there grew another demand for an inspection service, which would not only conserve the foods scientifically but would conserve them under absolutely clean conditions.

The new discoveries, which redirected the thought, the policy and the ideals of the canner, were also at work among all other producers of foods, resulting in a public demand that bakeries, flour mills, meat markets, dairies, creameries, ice cream plants, candy factories—that all producers of food should accept the new standards of purity and cleanliness. This is the period in the history of human foods which may be very justly called the food renaissance. It was marked by the enactment of the Federal Food Law in 1906 and by the passage of similar laws in all the states. This renaissance for pure and wholesome foods was like a tidal wave beating against the resistance of fixed and traditional habits which had come down through centuries. The force of it is not yet spent. The full meaning and significance of the discoveries of science, as applied to human foods, are yet to be written in even more striking and abiding conceptions and practices. The final and ultimate demand of this food renaissance is not only for the inspection and supervision of the raw products and of the processes of preparation, but it is for approved foods, i. e., for foods which merit either a private or a public certification.

Reasons for Inspection

This demand has already been answered in the case of meats where the sanction of the Federal Government now certifies their wholesomeness and cleanliness to the consumers of food.

In many of our cities, milk and other dairy products are certified, and dairy herds are subject to the tuberculin and other tests. This is also true of poultry products and fish. There is now a public demand that canned fruits, vegetables, fish and perhaps other foods shall also be certified. The canners, sensing this demand, realizing that it was sound and intelligent, growing out of the discoveries of science, have replied to it by setting up in their industry a scientifically conceived system of inspection and of certification. Thus, the canners have been impelled to organize this system of service for three reasons. First—to guarantee the purity and wholesomeness of their foods. Second—to guarantee that these foods have been prepared under sanitary conditions. Third—to certify the truth of their wholesomeness and cleanliness to the consumers.

Let it be understood once for all that this movement is no silly make-believe, no camouflage and no hypocritical pretense devised to take temporary advantage. It is the result of twenty-five years of earnest and careful thought and consideration on the part of men who have devoted their lives to the canning industry. It was first born in that critical and epochal hour when such men as Russell, Prescott and Underwood revealed to the men in this industry that the art of canning was really a scientific method of destroying harmful germ life in foods. This thought began to take form as, down through the years, the wholesomeness of canned foods continued to be questioned by physician and editor, by teacher and by layman. It took final shape when Dr. Bigelow, after spending years in sequestered study, declared to these men that the canning industry would not reach its full measure of service to the people until it had come into a new sense and into a new ideal of sanitation. It was then that these men said that some system should be devised and organized which would set at rest every fear, every doubt and every question.

Experience had demonstrated to these men that the solution of these complex problems could not be left to the free forces of competition. The doctrine of laissez faire, of survival of the fittest, found no practical application as long as an unenlightened public continued to provide a market for inferior products. What was required, and this was and is, the canners' problem, expressed in simplest terms, was a workable remedy that would educate the careless and indifferent canner and eliminate the non-edible and unsatisfactory canned food.

After mature consideration it was decided that a voluntary system of inspection, based upon high ideals, would be more desirable than any system established by law. Such a system has now been in force for four years and has proven to be effective, thorough-going and efficient, as well as highly stimulating to the morale of those engaged in the production of canned foods.

Food Distribution

Having scientifically produced human food, and scientifically prepared it, we must then scientifically sell and distribute it to the consumers. * * * No food industry has suffered so deeply the evils of over-production and under-production as the canning industry. These evils will account for any lack of financial stability or productive efficiency, which the industry may have. After years of costly experience, the canners reached the conclusions that if these evils could be minimized a most gratifying gain would come, not only to the producers of food, but to the consumers of food. They believed that a steady and constant demand for their foods would tend to correct many if not all the other evils incident to our present system of distribution. Therefore, a year ago, the National Canners' Association organized a national campaign of education. It was and is the purpose of this campaign to apply to the distribution of canned foods the same sort of scientific methods as the canners, under the inspection service, are to apply to the production and preparation of their products. The campaign was prompted by a desire to uproot the unfriendly opinion that had existed among a large section of people, against the free use of commercially prepared canned foods. They believed the campaign to be sound, feasible and timely, because it rested upon the sanitary inspection of the canneries and the certification of their products.

Interesting the Grocers

The introductory period of this campaign has passed. It was devoted to an effort to win the confidence and good will of the non-users of canned foods. The retail and wholesale grocers are now being informed as to the need and value of this movement. Beginning next December, the consumers will be advised that the canners are prepared to produce and have produced during 1920, certified products which have met the standards set up by the inspection service. Beginning in January, 1921, and continuing until July 1st, the consumers will also be informed as to the nature of the seal and as to its significance.

The campaign of education will not only instruct the housekeepers

as to the value of the certified canned foods, but it will also teach them the fundamentals which underlie the intelligent purchasing of such foods. There is nothing in this program, as there is nothing in the certification of the approved foods, that will modify the present trade custom in respect to the distribution of canned foods under private trade-marks. The distributor of such canned foods may at his option accept or decline the use of such seal. But it is the confident hope and belief of the canners that the increased demand for the certified products will ultimately lead all distributors to give them their approval.

But whether the demand be immediately quickened or not the canners believe that the program would be justified if it gave the consumers a more ample supply of wholesome foods, since they are convinced of one over-mastering fact, to-wit: that the day of questionable practices in the canning industry are numbered. After a hundred years of unrequited toil and indifferent success, they have decided to put themselves in the forefront of the progressive and scientific leadership of the twentieth century. Coming to realize their indispensable place in the economy of food conservation and production, they are not insensible to the debt of service which they owe to the public. They believe, therefore, that the time has come for the mobilization and consolidation of every economic force underlying the production of human food. * * *

As to the more important details of the plans, the inspection service is organized into convenient districts, each district in charge of a scientifically trained director, and under him are such a number of inspectors as will insure a daily inspection of each cannery within the district. All the districts are under the supervision of Dr. H. M. Loomis, whose life work as a chemist and bacteriologist is well and favorably known. The service covers the green produce of the canners and the finished product. It does not enter into the grading of this product except to set up a minimum standard of quality, below which no products will be certified. All these matters are fully defined by rules and regulations as set out in Inspection Bulletin No. 7.

As to the educational campaign, this is in charge of a bureau well officered by able men, and collaborating with the bureau is the advertising agency, the F. J. Ross Company, of New York.

Both the inspection and educational departments are under the general supervision of Secretary Frank E. Gorrell, assisted by the educational committee, composed of some 25 representative canners.

As to the financial resources pledged to this program, the inspection service is supported by an assessment not to exceed two cents per case upon the product inspected, and the advertising expenditure is secured by an assessment not to exceed three cents per case upon the product under inspection. As canners whose yearly output is some 27,000,000 cases have signed contracts for a period of three years, it will be seen that annual revenue will amply provide for an annual expenditure for advertising of $500,000 covering a period of four years. The first year's expenditure has been underwritten by the canners and their loyal and generous friends among the brokers and supply men.

Comprehensive and Thorough

Thus it is a program as comprehensive as it is thoroughgoing. It begins with the production of the food, and to this end, there is being built a strong organization, to which specially trained men will give their thought and labor. This program then provides for the scientific preparation of the food. To carry out this purpose, there has been established a great chemical and bacteriological laboratory. This is to be re-enforced by an inspection service in charge of scientific men. Finally, this program has set in motion a scientific method of selling and distributing the finished product, in charge of trained specialists whose duty will be to win the public confidence for certified foods.

The canners have no sense of reluctance or embarrassment in bringing to the members of the National Wholesale Grocers' Association something of the spirit and the purpose which now actuates the members of the National Canners' Association, as set forth imperfectly in what I have already presented for your consideration. We believe that we can come to you as co-workers in the field of food production and distribution. We should have been glad to have had your active aid in the beginning, except that we felt that the questions involved were purely family matters whose rightful settlement called for both self-determination and self-dependence on the part of the canners. We had already in the past burdened you too frequently with the short-comings of an industry whose own members in all conscience ought to possess the courage and native ability to re-direct it. Second, though we kept you advised we did not ask for your co-operation until our plans had been so fully perfected that their very stability would win your respect and confidence.

I appreciate, therefore, more keenly than I can well express, the opportunity which your thoughtful courtesy provides to lay before you the reasons and the purposes of our national plan and program for the re-direction of the life and well-being of the canning industry. It is a great honor to stand in the presence of those who are charged with the duty of efficiently distributing the food which the producers have prepared. In an hour so fraught with misgivings as to the future stability of our national economic solvency, if not the continuity of our free institutions, need I suggest that men engaged in like callings ought to seek to stand together upon the common ground of co-operative service.

I have learned with regret that a few food distributors have placed themselves in opposition to this movement to re-direct and re-establish the foundations of the strength and prosperity of a great food industry. I am loath to believe that any considerable number of those engaged in the great economic system to which the people must look for the just transmission to them of their food supply, desire or propose to take any action that might in any way weaken the will or undermine the purpose of a great body of food producers, who have been stirred to action by the new conceptions of science, the new ideals of truth, and the new methods of efficiency in the conservation and production of human foods.

Our Obligation

I repeat, we are marching into the light of a food renaissance, which is to bring to human food a new standing of honor and respectability. The movement is a part of the onward sweep of the twentieth century. It cannot be stayed by the forces of reaction. It is to proclaim a new law of protection to the people. It is to mean that the health and virility of this nation must be served. The thirty million workers in this country have a right to be served with foods that will make them fit for their daily toil, and the nation itself has a right to demand that the present economic loss amounting to

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Bacteria in (So Called) Soft Drinks

By LOUIS GERSHENFELD, Ph. M., B. Sc.

Professor of Bacteriology and Hygiene, Philadelphia College of Pharmacy and Science

SCIENTIFIC investigation has given ample- proof that there is a close connection between the spread of disease and the water that is used in a particular community. A pure water supply is of first importance in the prevention of disease and in the conservation of public health.

In the past, and from time to time, there has been considerable discussion over the superiority of the chemical or bacteriological examination of water. This has been quite useless, for though a bacteriological analysis may be shown to be of greater importance, a chemical examination will nevertheless detect the presence of certain chemical substances, from the relative amounts of which, an inference may be drawn as to the existence of pollution with human or animal excreta, or as in some instances, with poisonous or injurious compounds. It is therefore apparent that both examinations should be carried out.

It is with this in mind, that communities are compelled either by state or other recognized authority, to determine the purity of their water supplies, by performing bacteriological and chemical examinations at such intervals as may be found necessary for the particular community.

It is of course evident that such steps as taken for the careful guarding of our water supplies is justifiable. Furthermore, it is apparent why sanatarists soon became interested in the control of milk, cream, ice cream, ketchup and other food supplies, so as to be assured that these products will not introduce disease into the numerous communities. But there seems to be one class that has been sadly neglected by the sanatarists, a product that is being used extensively. In fact there are many who use soft drinks, (bottled or otherwise), almost exclusively for drinking purposes, while the sanitary water, supplied for such purpose, is used for every intention other than drinking.

The writer is aware that some municipalities attempt to guard the market supply of soft drinks, but he is assured that such effort along these lines in behalf of the health of their respective communities is indeed small, in lieu of the fact that there is an enormous demand, and in turn a considerable quantity of such preparations flooding the market. There is no doubt that no other product is supplied to the public in such large quantities, as are soft drinks.

A *pure* soft drink is just as essential to the prevention of disease as is potable water, milk, etc. At present, many behind the pure food movement, carefully investigate these products, to be assured that saccharin or an injurious coal tar coloring preparation is not being used.

A chemical examination to indicate pollution with animal excreta is not warranted or necessary, due to the fact that a potable and chemically pure water is furnished to the plant for the manufacture of the numerous products and the finished preparation does not stay around long enough to show any apparent ageing or decomposition.

The chemical methods of examining soft drink supplies, as previously mentioned, will not detect the presence of bacteria, much less assist in their identification. A bacteriological examination of such water will, however, reveal the number and in some instances the types of bacteria in a given volume. The fact should not be overlooked that even though a potable water was used, the finished product may nevertheless be highly contaminated, due to the carelessness and unsanitary methods used in the manufacture of the preparation.

The bacteriological examination of soft drinks is a more direct and delicate test, both on the sanitary efficiency of the operation of the plant, as well as on the factors, that have an important bearing as to the value of the finished product.

An analysis of the bacterial content of soft drinks will quickly reveal the hygienic conditions, prevailing at the time of the manufacture of the particular preparation. Such early examination will prevent epidemics, inasmuch as they quickly act as a check, if one is on his guard. It would be advisable and necessary to make an inspection of the plant, to check up the environmental factors, observe the cause of the pollution, and advise remedial measures to correct any evil that may exist.

It has been the pleasure and privilege of the writer to guard from a sanitary standpoint the making of soft drinks, and it is for this reason that he advises all manufacturers, not only of soft drinks but of all bottled water, to protect themselves, by carefully supervising their finished preparations. It is advisable that they start early and control the bacterial content of their samples, before they will be compelled to do so, as there is no doubt that in the near future, legal requirements will necessitate such supervision.

The community has a right to demand that whatever qualities soft drinks may claim and possess, these should be secondary to cleanliness. It should be the privilege and duty of those, who guard the health of the community to determine whether or not these products are free from contamination. The Public is demanding this and they have the right to expect it. Many laymen are under the impression that such strict supervision is at present being conducted by the proper authorities.

The water used in the manufacture of the soft drinks in those plants, under the writer's supervision, was usually found to be potable samples. The danger of contamination is due to the careless washing of the containers, or the introduction of a contaminated flavoring syrup, as well as other minor details carried out during the operation. Actual inspection of the plant at every stage of its handling, together with a close bacteriological examination of all ingredients entering into the preparation of the beverage will quickly lead to a determination as to the responsibility of an unsuitable end product. Such inspections and examinations save untold worry and considerable expense in the long run.

An artificially carbonated water prepared under cleanly conditions, will usually show a low bacterial content. In fact, the writer himself

carbonated a nuuber of samples at one particular occasion. The containers were cleansed properly, the flavoring syrup was low in bacteria, and all other procedures were guarded as they would be by any other layman familiar with the simple technique of filling the bottles. The bacterial content of the finished preparation was lower c. c. per c. c. than was observed in the water used in preparing the product.

To actually show what the condition is, so that other workers may join in further investigating this most interesting problem, and that the honest, modern manufacturer who produces soft drinks, (bottled or otherwise) may prepare a commercially possible, potable product without burdensome restrictions, the writer obtained 15 samples of different brands of soft drinks. Many of these were bought during the months of April and early May. The writer personally obtained them from lots, that were delivered (in most instances), in his presence. He was thus assured, that the samples represent the finished product, as sent out from the plant by the various manufacturers and does not represent samples that were allowed to incubate at room temperature or in a hot bed, as observed in many of the retail stores.

Of the fifteen, six (or 40 per cent) were found to contain B. Coli in 10 c. c. portions. Lactose Bile and Lactose Bouillon were used for the presumptive test of B. Coli. Three 10 c. c. portions were used. In all of the six reported instances, B. Coli were isolated from the fermentation tubes.

One gave considerable gas with all three 10 c. c. portions. No B. Coli were found, but B. Welchii, another sewage bacterium, was found present.

TOTAL BACTERIAL COUNTS ON AGAR AT 37°c. AFTER 48 HRS. INCUBATION

Two had counts lower than 100 per c. c. Three samples showed the presence of less than 300 bacteria per c. c. Three others had a bacterial content ranging between 500 and 1000 per c. c. The other 7 had a count of over 1000 bacteria per c. c.

The bacterial count on agar at 20°c. in most all of the foregoing samples was somewhat higher, than the 37°c. counts.

Some of the organisms found were staphlococcus, short and long chain streptococci, B. Coli, B. Welchii, B. Cloacae, B. Subtilis, B. Mycoides, B. Mesenterious Vulgatus, diphtheroids, streptothrices and molds.

The occurrence of some of the foregoing does not speak well as to the cleanliness of the samples and as to the desirability of indulging constantly in such drinks.

Facts as these give more weight to the thoughts, entertained by the writer and others, that more attention should be given to the sanitary aspect of this whole problem, so that all concerned may profit thereby.

Examination of Frozen Egg Products

Food Specialists Standardize Technical Methods for Testing Suitability of Frozen Eggs for Food

TECHNICAL methods for the examination of frozen whole eggs, frozen yolky mixtures, frozen egg yolk, and frozen white of egg, in order to determine with certainty those that are suitable for food, have been standardized and published by the specialists of the Bureau of Chemistry, United States Department of Agriculture, who have made an extended investigation of the best methods for handling eggs and egg products from the point of production through the channels of commerce to the consumer.

Large quantities of shell eggs arrive at buying centers in a cracked or broken condition, or otherwise unsuitable for sale as whole shell eggs. It is the commercial practice to break such of these eggs as may be fit for food and freeze the yolks and whites either together or separately in large or small cans for use by commercial bakers and large hotels. So extensive has this business become that 19,286,396 pounds of frozen egg products were held in storage on January 1, 1920. Eggs which are unsuitable for food should be separated out for technical purposes, such as tanning. Unless care is taken in separating the good eggs from the partly spoiled eggs, some off-grade eggs are likely to get into the cans with the good eggs. If the proportion of spoiled eggs present in a mixture is appreciable they may be detected by the sense of smell and taste, but if the proportion is comparatively small, chemical, bacteriological, and microscopical methods must be employed. Contamination may also result from insanitary practices in handling the utensils and eggs.

The specialists have developed reliable methods for the chemical, bacteriological, and microscopical examination of egg products which have been frozen in order that spoilage, or the organisms which produce it, or the use of spoiled eggs in a product, may be detected with certainty. The methods can be used only by trained chemists and bacteriologists, since they are highly technical. The bulletin will be of interest to Federal, State, and Municipal food-control officials and to commercial bacteriologists and chemists who are called upon to examine frozen egg products.

The results of the investigation are published in United States Department of Agriculture Bulletin No. 846, entitled "Examination of Frozen Egg Products and Interpretation of Results" which may be had upon application to the department, Washington, D. C.

Other bulletins of interest to those engaged in the egg industry giving the results of investigations by the Bureau of Chemistry follow: Department Bulletin 51, "A Bacteriological and Chemical Study of Commercial Eggs in the Producing Districts of the Central West;" Department Bulletin 224, "A Study of the Preparation of Frozen and Dried Eggs in the Producing Section;" Department Bulletin 391, "Accuracy in Commercial Grading of Opened Eggs:" Department Bulletin 663, "The Installation and Equipment of an Egg Breaking Plant." Any of these publications may be obtained upon application to the department at Washington.

Progress of Dehydrating Industry

By ALFRED NEUMANN

Secretary and Treasurer of the International Dehydrator Co.

IF the manufacture and use of aeroplanes was advanced a very long way through the expenditures and activities of the various governments during the war, the same applies in a smaller way to dehydration. Aeroplanes, of course, are a strictly modern invention while the principles of dehydration are extremely ancient.

What is dehydration? Dr. Clements of the agricultural department of the Los Angeles Chamber of Commerce was asked this question and he answered:

"Dehydration means the reduction of organic materials to a desiccated condition without alteration of cellular structure or chemical change. In other words, the elimination of the greater part of the water content."

In addition Dr. Clements said:

"Two years ago, while under stress of war, the British government made some interesting and very successful tests in the dehydration of berries and other highly colored fruits and vegetables in an atmosphere of nitrogen, but the process was far too expensive to be utilized in general manufacture. The object of the British Government at that time was to overcome the enormous cost of $3,000 per car Los Angeles to Port Sarnia—recognizing that one carload of dehydrated berries would be the equivalent of 20 carloads of the fresh iced material, the strawberries having been frozen in barrels and kept so until ready for preserving. I might add that the expense through dehydration in nitrogen was much greater than the $3,000 under icing.

"The necessity for this neutral atmosphere is due to the coloring matter of all fruits and vegetables being iron and iron salts, and to the instability of their chemical formation and susceptibility to oxygen and ozone. In any dehydration, either electrical or otherwise, in which there is vibration or artificial wind drafts, the excess of oxygen, and a still more deleterious product — ozone — results in the blanching of the product.

"The International people seem to have stumbled upon this one principle accidentally—the use of carbonic acid gas, being a by-product of simple combustion in the creation of heat within the dehydration plant itself, carbonic acid gas being so much heavier than the normal atmosphere, forces it to the top of the container and excludes any possibility of ozone or excess of oxygen. Another item of interest is the embodiment of the humidor principal, which has been accepted, lock, stock and barrel, by the United States Government in the kiln drying of all woods necessary to the airplane. The humid atmosphere moistening the superstructure or envelope of the material to be dehydrated stimulates capillary attraction, making release of retained moisture even, and a uniform product results.

"This makes a very complicated problem and places dehydration directly in the hands of the chemist and biologist."

The interest in dehydration at this time is world wide. We ourselves have received inquiries from almost every civilized country. Recently inquiries came from such countries as Ecuador, British East Africa, Australia, Japan—in fact—from everywhere. There are possibly a dozen companies in the field manufacturing dehydration plants and apparatus ranging in price from $1,000 for a very small plant to large figures and sizes. We have confined ourselves to a standardized unit plant dehydrating from 5 to 10 tons fruit and vegetables per day of 24 hours according to character and conditions of product. Our plants have successfully dehydrated grapes, apricots, apples, olives, rhubarb, cabbage and many other products.

The past month has developed an unusual and, under present high cost of living standards, very deplorable condition in the San Fernando Valley—within the city limits of Los Angeles. It made practically valueless approximately 10,000 tons of cabbage. After a large acreage of this cabbage had been turned under we started to agitate the matter of dehydration and as a result the various International Dehydrators located in the cabbage district are now dehydrating cabbage. This saves a large amount of valuable foodstuffs which on account of lack of cars would have been a total loss otherwise.

The grape growers of California with an estimated yield this year of over 300,000 tons of grapes, of which a large proportion are wine grapes, which might be considered of very little value under prohibition, were facing a grave problem. Wine cannot be made nor can the fresh grapes be shipped for making wine. Even if they could be shipped for this purpose, the lack of refrigerator cars would make this impossible as not more than a fifth of the total crop at the best could be moved in refrigerators. Various new uses for wine grapes have been found and will be found, but in the meantime the grapes must be harvested and kept in condition and here again dehydration solves the problem. A great part of the crop of wine grapes will therefore be made into raisins. It must be noted in connection that while it might be possible in Southern California to take a chance on the weather and dry the wine grapes in the open air, this is not possible in the largest wine grape growing sections in the central and northern parts of the State; and here artificial drying must make the raisins. It is interesting to note that while it requires from 4 to 5 weeks to produce raisins in "sun-drying," the work is done in approximately 12 hours in a dehydrator. It has also been held and this year's experience will prove, we think, that lye-dipping, which has been heretofore practiced to prepare the grapes for drying is unnecessary and that the same results can be obtained by blanching, or precooking, the grapes in a steam chamber such as the International Blancher.

We have also had very good success in the dehydrating of apricots in our plants. While for "sun-drying" such apricots must be sulphured, we again have gotten remarkable results by substituting steam blanching and using no chemicals which, if it is proven out absolutely, should be an enormous step forward in the treatment of foodstuffs.

Finally, it may be of interest to know that a properly appointed committee consisting of scientific men

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Science Enters the Retail Grocery

By AARON HARDY ULM

"THE best joke book extant is the cook book of pre-war vintage," declares Mrs. Caroline B. King, domestic science expert who has introduced a brand-new idea into the retailing of groceries. She is now on the executive staff of the Old Dutch Market Company, which operates a chain of grocery stores in Washington, D. C. The company is opening a new one—it will be the largest in its chain—in Richmond, Va. That store has a feature that would seem wholly foreign to a food market. It is a school room or lecture hall, where its customers and the public generally may get from Mrs. King expert advice about foods and how to handle them to best advantage in view of scarcities and high prices.

"What I say about the cook books," continued Mrs. King, "applies to my own as well as to others. Get one and see how conditions have made jokes out of most of the recipes which a few years ago were the proud boasts of all of us cook book writers. You will find pounds of butter and dozens of eggs and hampers of sugar mentioned as if they were available in unlimited quantities to every housewife.

"High food prices will revolutionize kitchen practices by forcing housewives to get results in ways that the cook books of even a few years ago don't point out.

"In this transition the retail grocery store can be and out of self interest should be of help to the cook befuddled by conditions that don't seem to be improving or even promising to improve very much.

"It should be able to help with advice and information as well as to sell food."

In line with that idea, Mrs. King has created a domestic science and home economics department for the Old Dutch chain of stores. It was undertaken a few months ago as an experiment. According to J. W. Whitfield, president of the company, the plan so far has been remarkably successful, though to date it couldn't be elaborated to fullest possibilities. The reason is that none of the Old Dutch markets, like virtually all other markets, were equipped for cooking schools and lectures, or even elaborate demonstrations.

When Mrs. King was first engaged they improvised a little hall over one of the markets—one situated in an ultrafashionable section of the national capital—and invited the housekeepers of the neighborhood to come in during afternoons and listen to Mrs. King. After a few lectures, the arrangement had to be abandoned because the women so overcrowded the small room that fire risks became dangerous.

Since then Mrs. King has confined her active work very largely to the company's advertising, which constantly is made up in great part of recipes prepared by her with the view of aiding the stores' customers in surmounting the difficulties of the H. C. L. Reactions from that kind of advertising have been pronounced, expressing itself frequently in the trend of sales, and often greatly increasing sales in lines that were stressed.

When Mrs. King was engaged, the Old Dutch Market Company was preparing to enter Richmond, Va., where it has opened a market where they expect to do a business of a million dollars or more a year. It will be among the largest retail grocery stores in the South. In planning it, the company's executives studied the field with thoroughness and have endeavored to organize it in a way that will cause it to most fully meet the city's needs.

"It is singular," says Mr. Whitfield, "that most people think anybody with any kind of equipment can successfully retail food, the most important and in many ways the most intricate of all merchandising. Food isn't like such things as hats, cloaks and shoes, which with moderate care will keep indefinitely. A great many foods, and especially meats and green groceries, must be moved rapidly and skillfully by persons of good ability and training, if they are properly conserved and distributed. But to make managers and clerks of that kind possible, you must have big volume of business, preferably under a single roof, so that the overhead will be distributed over a big trade, and low margin of gross profit made practicable.

"That idea prevailed in the organization of our Richmond store."

Upstairs over the store is a large hall that will be used by Mrs. King in carrying on extension work directly with the store's customers and the public generally.

She will organize and conduct cooking classes and deliver lectures on all phases of food and cooking, as well as kindred home economics problems.

Although she has taught domestic science in a Philadelphia college and has written on the subject for many publications, Mrs. King finds it highly pleasing to be an attaché of a retail grocery concern.

"The ideal place to teach domestic science," she says, "would be the street corner, in the fashion of your barking salesman or oratorical agitator. For then you could reach the women who were not taught domestic science in school, are not regular readers of magazines that publish articles on the subject, and who still try to cling to the out of date methods employed by their mothers. As a rule those methods were not sound at any time; now food conditions make them impossible.

"But it is impracticable to teach cooking on the street corners. The next best place is the grocery store, to which women of all classes go for their family food supplies.

"They can't get much help from the store manager or clerk, for if they happen to be skilled men their skill runs along the line of salesmanship and not the preparation of foods."

In fact, one of Mrs. King's duties is to teach the company's selling force about the differences between various foods and the uses to which they can best be put.

"The retail grocery isn't doing its full part in times like these when it merely hands the customer something under the belief that the customer always knows how best to use it.

"Then the grocery store can solve many of its own difficulties, like having to cut down on the sugar allowed each customer or charge a luxury price for white potatoes, if it is in position to tell the customer how she may get along on less than she is accustomed to, or even none at all of some particular product.

"In a half hour's time I can demonstrate to any woman how a fairly good cake may come from ingredients that call for only one egg; how, with two eggs, she can bake an excellent cake.

"There are scores of other short cuts whereby present cooking diffi-

culties due to high prices may in large part be out manouvered.

"Then the store can improve its business and also be of practical help to its customers by showing them how to use foods, or forms thereof, against which there is unmerited prejudice. Take frozen fish, for example. There is no reason why they shouldn't be consumed in immense quantities, and they can be delivered to the inland housewife cheaper than other fish. It is only a matter of education, for frozen fish to become as popular as any other kind. But it involves more than the mere information that, on the authority of the United States Bureau of Chemistry, fish properly frozen and stored—as is the case with most of them put on the market—are excellent food. The housewife must be shown how to handle and prepare the fish.

"It is that way with many foods of a seasonal or storage character."

Recently the Old Dutch Market people startled food circles of the East by importing into Washington a large supply of New Zealand lamb which they were able to sell far below the prices for domestic lamb. It necessarily was frozen and the stores' clientele was not accustomed to buying frozen meats. Then, too, the antipodal character of the word New Zealand suggested doubts about the quality of the meat.

Mrs. King helped to popularize the product by inserting unique lamb cooking recipes in Old Dutch advertising that appeared in the daily papers. They were applicable to any variety of lamb, for the New Zealand kind didn't differ materially from the domestic, but the originality of many of the recipes overcame prejudice against the new product.

In addition to advising the stores' trade, via advertising, lectures and demonstrations, regarding the economic preparaton of foods, Mrs. King will endeavor to bring to the management a viewpoint often hard to procure, that is the viewpoint of the community.

She has already made cursory surveys of several neighborhoods served by Old Dutch stores. In two she found that the communities had outgrown the stores, in quality more than quantity of population, without anyone realizing the change. The result was that much business that would have gone to those stores, had they kept in line with community advancement, was going elsewhere. A furbishing up of each store resulted in increased business.

"Our domestic science department is still an experiment," says Mr. Whitfield, "and we can't tell just how it will work until we give it a full try out, which we are now doing in Richmond. For example, it is hard to check up the full effect on sales when the propaganda is handled chiefly through advertising. We didn't take it on as a sales or even as an advertising proposition, but of course we can check it up as a rule only through sales. We put it in for the purpose of giving our customers and the community generally a service which in these complicated food times they need. Though we operate it as an adjunct of our stores, anyone may use the department. No one who attends a demonstation must be a customer or is required or even urged to buy anything from us. The demonstrations have to do with products sold by others as well as by us, but of course, everything else being equal, Mrs. King uses goods put out under our name, such as our own branded flour, in her demonstrations.

"In Richmond, Mrs. King will work with the sales force, in that she will keep them advised of the character of her demonstrations so they may prepare for sales resulting therefrom. After each of the lectures given in Washington, many of the women went directly into the store and asked for articles Mrs. King had used in making demonstrations.

"Though, as I said, we are not judging it by the financial return, added sales coming from the service already show that it is profitable to us as well as helpful to our customers."

Pennsylvania Bureau of Markets Standardizes Containers to Protect Public

BECAUSE the average person relies almost entirely upon the eye to detect differences in the size of the various packages in which farm products are offered for sale, the practice of using short measure baskets and boxes which look like standard sizes has developed. On practically every market there are many packages so similar in appearance that it is impossible to tell that they are of different capacities.

In the effort to do away with some fifty sizes, shapes and makes of climax baskets for grapes, the Bureau of Markets of the Pennsylvania Department of Agriculture has issued rules and regulations providing for three standard sizes of climax baskets, holding 2, 4 and 12 quarts, respectively. These three sizes will answer all practical needs of the trade and everybody can distinguish the different capacities at a glance.

Likewise, the Bureau of Markets rules and regulations provide four standard sizes of baskets for berries, fruits and vegetables in place of the many baskets with slight variations in capacity which are being used. These four standard baskets hold ½ pint, 1 pint, 1 quart and four quarts, respectively.

These rules and regulations further provide for two crates of uniform dimensions to hold the standard berry boxes and the four quart baskets. The standard 32 quart crate will hold 32 quart or 60 pint berry boxes and the 6 basket crate or carrier, largely used for peaches and tomatoes, holds six 4 quart baskets.

All these standard containers must have the capacity in terms of dry measure plainly and conspicuously marked on the outside thereof and all the standard closed containers must have the name and address of the packer.

All violations of these rules and regulations for standard containers should be reported to the Bureau of Standards of the Pennsylvania Department of Internal Affairs, Harrisburg, Pa., or to the local city and county inspectors of weights and measures.

Copies of the Bureau of Markets service and regulatory announcement No. 1, which contains the rules and regulations for the standard climax and berry baskets, may be secured from the Bureau of Markets, Pennsylvania Department of Agriculture, Harrisburg, Pa.

Many Oleo Licenses

The Bureau of Foods, Pennsylvania Department of Agriculture, has issued 5,468 oleomargarine licenses since the first of the present year. This is only 320 less than were issued during the entire year of 1919. Of the number issued so far this year, 125 have been taken out by boarding house keepers and six by restaurants.

Investigations in Preserved Food Products

By ARTHUR W. CHRISTIE, University of California

WORK at the University of California upon fruit products has been carried on for many years and by many investigators. Much of the earlier work was performed by Hilgard, Jaffa, Colby and Bioletti, upon the chemistry and fermentology of wine making. In later years the interest has shifted from the fermentation industries to a study of the technology of other fruit products. Not only has this been true of the University, but also of the investigators of the United States Department of Agriculture. W. B. Alwood was one of the foremost United States Department of Agriculture investigators in wine making; while of those in that department who are prominent in fruit products investigations I would mention Dr. Carl Alsberg, chief of the Bureau of Chemistry, who has instituted and directed in a general way the work on fruit products in his bureau; H. C. Gore, famous for his work on fruit juices, fruit syrups and vinegar; Frank Rabak, of the Bureau of Plant Industry, who has worked a great deal upon the manufacture of oils from waste peach, apricot, prune, grape and cherry seeds; Charles T. Dearing, who has done all of the Department's work on Muscadine (Southeastern United States) grape products. C. E. Mangels and P. F. Nichols should be mentioned for their recent and current work in fruit and vegetable dehydration, Mr. Nichols now being stationed at Atascadero in California. Professor J. S. Burd, when he was a member of the Bureau of Chemistry, carried on important investigations in the sulfuring of fruits. In our own station, Professor Jaffa has always been prominent in studies on the composition and food value of fruit products.

The Zymology Laboratory of the University, to which the writer is attached, is devoted almost entirely to fruit products, although some slight attention is given to vegetable products and to cereal products. Our duties are three-fold, viz.: public service, instruction and investigation.

Public Service

Under the head of public service the members of the laboratory force co-operate with canners, fruit driers, vinegar manufacturers, fruit juice manufacturers, and others in the study of factory problems or the development of new processes. This is done by personal co-operation in so far as time and facilities permit.

A very important part of the public service work is in answering by correspondence the many questions that come to the University in this field.

Other phases of extension work are co-operation with the Agricultural Extension Division and farmers' Institutes, or in the short courses at the University Farm or by demonstrations and lectures at other gatherings of this sort.

By means of the extension or public service work we keep in touch with the live problems of the day. I can assure you that the number of unsolved and pressing problems in the field of horticultural production is overwhelming. Prof. Cruess and I have presented to us so many interesting problems for investigation that we are often at a loss which fair charmer to choose for close attention. Many of the questions that arise are actually fascinating and it requires much strength of resolution to stick to the work in hand and postpone work on some of the many questions that press in upon us.

Instruction

To date we have not emphasized instructional work because only recently have we had sufficient equipment and men to give adequate attention to both investigation and instruction. We believe, now, however, that we have ample facilities for instruction in the fundamentals of fruit products, factory control, and in the fundamentals of manufacture. We are fortunate in having at our very doors in the Bay Cities almost every known type of fruit products plant, making the factory study by students very easily carried out. We find that students from foreign countries, especially Palestine, India, China, Japan and the South American republics are particularly interested in our work.

We believe that this field offers exceptionally profitable opportunities for men and women well trained in the chemistry and bacteriology as well as the technology of canning and preserving. These industries are large, it is true, in this State, but the real possibilities are being realized only to a very small degree.

Investigation

The problems in the investigational side of our work, of course, rightfully utilize the greater part of our time. We have at all times many problems under consideration and active work under way on several; but there is always one major project upon which most of our effort is concentrated. At present, this major project is dehydration. Last year it was fruit syrups; before that, olive pickling, and so on. Often one year's time is not sufficient to acquire the needed data. This is true of dehydration which has already taken one year's time and will probably require at least two more seasons for completing the work.

I can best illustrate the nature of the problems studied by a short resume of some of the results obtained by the Zymology Laboratory during the past few years.

Fruit Juices: By two seasons' investigation at the university farm, a process for preparing a grape juice of deep red color and rich pleasing Muscat flavor by combining wine grapes and second crop Muscat grapes was developed. We believe this juice equal in quality to that made from Concord grapes and superior to Concord juice in clearness and color. This juice can be produced considerably cheaper than the Concord juices of the eastern states and would seem to have a good future. The improvements over usual California methods lie in the blending of Muscat grapes with our wine grapes to impart flavor, in developing simple and effective methods of clarification, in the use of glass bottles instead of wooden barrels for settling of juice before bottling, and in carbonating the juice lightly before bottling.

It was found that a brilliantly clear purple-red juice of excellent flavor may be made from split and otherwise cull pomegranates. The principal difficulty was found to be in separating the arals or kernels

from the skin and rag of the fruit which is very rich in tannin and very astringent or "puckery." By use of a machine similar to a tomato pulper the kernels may be threshed out of the fruit, and separated satisfactorily from the pulp and skins and the juice pressed from the kernels. The juice is often very sour and requires the addition of a small amount of sugar at time of bottling. The finished product is believed to be equal to loganberry juice in every respect.

Fruit Syrups: The 18th Amendment to the Constitution has imposed upon us the duty of seeking for an outlet for the wine grapes of California. It is my opinion that red grape syrup is the most promising product that may be made from wine grapes and sold in quantity. It is a beautiful intensely deep purple-red liquid with a very delicious blackberry jelly-like flavor. "It goes fine" on hot cakes and biscuits; is excellent for use as a beverage when diluted with carbonated water; makes excellent sherbet; greatly improves ice cream specials and finds many other uses in the household.

With the building of wineries in the Orient it may find a large export trade for wine making purposes because just as good a red wine may be made from it as from fresh grapes. All that the factory in Japan need do is to dilute with water and allow the product to ferment in the good old way. Several hundred thousand gallons were made during the past season and readily sold at a very remunerative price.

The syrup is made by crushing, heating the grapes to 165° F., and pressing to obtain the red color. The red juice is filtered and concentrated to 68% sugar in a vacuum pan which permits boiling at a low temperature in order that color and flavor may be conserved.

During the past season experiments were made upon the freezing process of concentrating fruit juices in which the excess water is removed by freezing, leaving behind a liquid rich in sugar and retaining in concentrated form all of the fruit flavor. This is merely a variation of the well known dry states method of making "hee haw" cider or "apple jack"; that is, cider with the kick of a Missouri mule. If hard cider in barrels is allowed to freeze slowly a layer of pure water ice separates and adheres to the walls of the barrel and as the freezing continues the concentrated cider goes toward the center of the barrel. The last unfrozen five gallons in the barrel is said to contain over 40% alcohol—a drink strong enough for the most exacting. It is said that this drink is what has kept Maine "dry" so long.

The freezing process has been highly developed in France and Italy and will probably become important in the United States in time. H. C. Gore of the United States Department of Agriculture Bureau of Chemistry has worked a great deal upon the process and has given the public his patented system of carrying out the process commercially.

Olive Canning: Olive pickling is a process that had not been investigated from a scientific standpoint until a few years ago. As normally carried out the process requires three to six weeks and the finished product by such methods is often tough and of poor flavor. The usual method involves exposure to air during pickling to intensify the color. Prof. W. V. Cruess and J. R. Zion were able to develop modifications in the methods so that the entire process is carried out without exposure to air and the time reduced to four to seven days with at the same time an improvement in quality compared to the product made by the old process. The process is now used in several factories with success. It was given to the public for use without royalty under public service patent.

Our present work on olives is a study of sterilization methods to develop a method of sterilizing which will prevent a recurrence of poisoning from ripe olives. An investigation of factory methods shows that California olive factories are sanitary, modern in every way, and that ripe olives as now packed are as safe as any canned fruit put up in the United States.

Fruit Drying Investigations: Because of the early rains of 1918, California prune growers lost over $5,000,000. Our investigations showed at that time that rain-soaked prunes and raisins as well may be saved by exposing the fruit to the fumes of burning sulphur a short time to check mold and fermentation.

As a result of this loss a great stimulus was given to the interest in evaporators. Little exact knowledge upon fruit evaporators was available. We did not know whether it costs more to evaporate by artificial heat or by sun; nothing in regard to relative yields and qualities by the two methods. On this account and also to study wine grape drying we built a commercial size evaporator at the University Farm and a small evaporator in our Berkeley Laboratory. We have found that evaporated prunes are better in flavor, color, and appearance than the sun dried; that the moisture content may be very accurately controlled and that the cost of evaporation is probably very little greater than in sun drying. The evaporated product is dried in a cleanly way and for this reason alone should supplant sun drying in time. Various types of commercial evaporators were studied in comparison with our own outfit and useful deductions made. We believe that evaporation by artificial heat has a great future. We are especially interested at the present in drying fruits at low temperature in a vacuum oven which permits retention of color and flavor to a remarkable degree. So far the equipment has been too costly for general adoption but because of the exceptionally fine quality attainable by the vacuum process it will probably be developed upon an industrial scale.

Miscellaneous Investigations: These have included studies upon olive oil refining, fruit preserves, jellies, jams, orange marmalade, vinegar and fruit canning. One line of products appeals to us strongly and that is the one of canned jelly and marmalade juices. These are nothing more nor less than the juices expressed from boiled fruits and canned. It is so prepared that the housewife merely opens the can into a jelly pot, adds sugar, brings to a boil, and pours into glasses, obtaining a clear firm jelly without having to learn the mystic secrets of jelly making. These products have great commercial possibilities.

Experimental Products Factory: Our work at present is badly handicapped because of lack of facilities for testing our laboratory results upon a commercial scale. It is hoped that our laboratory may be in a position to install at the University Farm equipment for canning, fruit juice manufacture, jelly, jam, and marmalade making, vinegar manufacture, etc., on the same scale that we are now equipped for drying investigations. If this be done it will be possible to not only develop in the laboratory new and improved processes but also to place the processes upon a commercial basis. Such a system would greatly increase the value of the re-

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Discussion of New Book on Foods

By ALBERT K. EPSTEIN, Research Chemist

The Microbiology of Foods, by Albert Schneider, M. D. Ph. D. Published by Blakiston's Sons & Company, Philadelphia, Pa.

THIS book was primarily written for Army Medical Officers, Dietitians and Army Chemists who are engaged in the control of food used by the Army. The first portion of the book covers a study of the nature of decomposition processes that take place in various food products and also methods of detecting microbiological changes. In view of the fact that this book was intended for Army analysts who may not have adequate laboratory facilities with elaborate apparatus to perform tests, the author suggests a number of novel methods which can be used in the field or in camp. For example, on page 29 he describes a vital incubator made from aluminum which the operator wears upon his undergarment next to the skin for 36 to 48 hours in order to maintain it at body temperature. At night the "box" is shifted forward to rest upon the abdomen. On page 65 the author suggests toy rubber balloons of assorted forms and sizes to be used as containers for bacterial cultures and a hip pocket size of a tin smoking tobacco container of Prince Albert or other tobacco brand, to be used as a holder for tube cultures.

These novel methods and apparatus may be of interest to micro-analysts who are engaged in civil life in supervising food in rural communities where they may not have up-to-date laboratory equipment.

The second part of the book covers the subject of micro-analytical rating of food products. The author suggests certain limits of decomposition, but does not give any references to researches upon which his limits are based. He takes into account only micro-biological investigations from which conclusions are drawn with reference to the purity of the product. While it is true that a count of the living organisms and total organisms, both live and dead, may throw some light upon the nature of the product, still chemical analysis for decomposition products cannot be disregarded. For example, the author suggests on pages 140 and 141 a standard for frozen eggs. He says, "Storage eggs, frozen eggs, dried eggs, preserved eggs, etc., which show from 50,000,000 to 200,000,000 bacteria per cc., or per gram, should be classed as stale and should be used for baking and cooking purposes only." 200,000,000 bacteria in frozen eggs, the author considers the upper limit for food purposes. As a matter of fact the investigations carried on by Dr. Pennington, Jenkins and their collaborators have shown that under ordinary conditions it is possible to produce frozen eggs with the bacterial content not higher than 10,000,000 per gram, and that eggs which they class as summer eggs may contain as high as 25,000,000 organisms per gram. The Folin nitrogen method has been found to be a very convenient chemical index to determine decomposition of eggs and has been used extensively as a basis for prosecution for adulteration in the courts of the State of Illinois. At present in the Illinois State License Egg Breaking establishments, frozen eggs are produced with a bacterial content from one to six million, on an average.

In the rating of gelatine the author develops an arbitrary formula based upon the glue percentage present. This he derives from his assumption that commercial glues contain 100,000,000 insoluble organic particles per gram and 2,500,000,000 of total bacteria. On page 183 he suggests that edible gelatine should not contain any more than 200,000,000 per gram. These standards are unwarranted in the light of recent processes used in the manufacture of gelatine and glue. It is possible to manufacture a glue which is transparent and has absolutely no suspended particles in it by means of filtering it through a filter press. The author seems to define glue as a decomposed gelatine but it is possible to make a glue which is practically not decomposed bacteriologically by extracting materials which have been previously extracted several times for gelatine purposes, and which under continuous boiling and prolonged extractions give a substance which is called technical gelatine or glue, due to the fact that it has lost in the process of boiling certain gelatine properties. This product may not contain a very high number of organisms. Gelatines made under the present processes of manufacture have been found to contain about 50,000 live organisms per gram and about 500,000 of total live organisms per gram. In some cases they run as high as 10,000,000.

On page 185 the author states that it is necessary to test gelatine for arsenic because some of the commercial gelatine has been made from hides which are treated with arsenic as a preservative. However, a considerable amount of arsenic may be found in the gelatine which is due to the arsenic present in the raw material itself, in gelatines made from bone the arsenic has been found to increase with continuous extraction. Another source of arsenic may be sulphur dioxide made from iron pyrites, which is used to bleach gelatine. However, under the present manufacturing processes it is possible to make gelatine with an arsenic content one and four-tenths (1.4) parts per million, which is the maximum amount allowed by the majority of State Food Laws.

However, to the food chemist and micro-analyst, the book is of interest in that it contains a compilation of analytical methods and a discussion of the nature of food decomposition from a biological standpoint.

This book carries a semi-official character in view of the fact that the author was a member of the Volunteer Medical Reserve Corps and in that it was written primarily as a guide for Army Officers and, as stated in the preface, Major Samuel C. Prescott, office of the Surgeon General, War Department, Washington, gave the manuscript a critical reading. In view of this fact the reviewer believes that the author ought to be more conservative in promulgating standards for food products.

What Ghee Is

Anybody who has traveled in India knows what ghee is, but a good many people do not know that it is butter, made from cow's or buffalo's milk, then melted and clarified. It is a staple food in India, much esteemed by the natives.

Wrongly Christened

"I think I should have named my baby 'Flannel,'" said Mrs. Binks.

"Why?" asked Miss Jinks.

"Because," answered Mrs. Binks, "he shrinks from washing."—*Pittsburgh*

Fears National Food Calamity

Farm and Home Economist Sights Famine Before 1921 Harvest

HERBERT MYRICK of Springfield, Mass., widely known as the editor of *Farm and Home,* and an authority on agrieulture and eeonomics, recently told the press that never before in his 40 years of experience had he been so alarmed over the food supply for winter.

"A food panic is to sweep Massachusetts," he said. "Sugar, now almost unobtainable at 25 to 30 cents a pound, may be followed next winter by eggs searce at $2 to $3 a dozen, flour $25 to $40 a barrel, potatoes $10 to $15 a bushel, milk 20 to 30 cents a quart, butter $1 to $2 a pound and other foods in proportion."

HALF NORMAL ACREAGE

"What is your basis for such an alarming propheey, Mr. Myriek?" was asked.

"There is no great surplus of food anywhere on the globe, speaking generally," he replied. "Here in New England, indeed throughout much of the United States, considerably less than the normal acreage has been planted. It is now too late for planting.

"Why is this? The season, late and backward, eold and wet; not half the needed supply of farm labor. Higher wages and shorter hours in other industries not only absorb much of the labor usually available for agrieulture, but have indueed great numbers of owners and tenants to quit farming. Cattle and hogs, lower for months by 25 per eent or 50 per eent, have inflieted vast loss upon produeers. Daylight saving imposes artifieial burdens. What farmers buy is high, mueh of what they sell is low, relatively.

"The world seareity of food means that the battle between life and death, in the contest to produee food for the ensuing year must be fought out largely during the next 90 days. Should weather conditions be unfavorable throughout the northern hemisphere for the seriously reduced acreage in erops, famine eonditions may eonfront the Amerieau people long before the harvest of another year. Elsewhere conditions may be yet more eritical.

"The worst drought in five years forees Australia to prohibit exports and to conserve for her own needs the surplus from her previous erops. The granaries of the eastern hemisphere are swept bare. North Amerieu eame into June with the smallest acreage and poorest eondition of all crops ever known relative to population. South Amerieu has reduced harvests, though her exports eontinue.

FEARS EVEN BREAD RIOTS

"Here in the United States food supplies are so low that should the weather of July and August be unfavorable, the erop shortage may be followed by bread riots and even worse next winter and spring. The deflation now in proeess may cause slowing down and less wages just when food seareity may be at its worst."

"Then you believe, Mr. Myriek, that the gaunt speetre of famine hovers ominously over a distraeted world?"

"Yes, these are fundamental eonditions. They are most important. All other faetors shrink into insignifiance compared to the food crisis.

"Beeause this profound truth is not yet fully reeognized, labor strikes for fewer hours, less effort, more pay. Produetion is eurtailed, demand exeeeds supply, priees rise. The thoughtless spend with lavish folly what are indeed prineely incomes. Overeonsumption vastly outruns underproduetion. Towns inerease at expense of eountry. Returns earned or gained in other industries so vastly exeeed the returns of agrieulture that eountry withers as city grows. Denuded of their labor, farms are foreed to restriet the area planted and to reduee their flocks and herds to sueh an unheard of extent that the relatively few statesmen and eeonomists fully eognizant of today's faets are alarmed as to the gravity of the food prospects for the 12 months following July.

PEOPLE BLIND TO PERIL

"Yet the masses are blind to all these and other momentous signs of the times, though writ aeross the skies in flaming words that only the blind will not see. Eaeh city gloats over its gain in population, as annouueed from day to day by the eensus; whereas sueh figures simply emphasize the awful extent of drafts upon the land, drafts that in former eras have presaged the deeline and fall of eivilization.

"Engulfed in their own follies, some eities today insist upon miscalled 'daylight saving,' so as to have one more hour for daily pleasure, regardless of the added tax this imposes upon agriculture, already staggering under an unpreeedented eoncatenation of natural and artifieial burdens wholly beyond the farmer's eontrol.

"To impose daylight saving upon the farmer, which is being done unless the pending law is repealed, will add from 10 per eent to 25 per eent to his eosts and further restriet his produetion. But the psychologieal effeet upon the farmer of the miscalled daylight saving is even worse than the economie result. After years of extraordinary effort and saerifiee to produee for man and beast the food which won the war, the farmer is still made the butt of ridieule by thoughtless town folk. They expeet him to work harder and longer so that food may be eheaper. This laek of appreciation, this underrating of the farmer's eeonomic importance, business standing and soeial position has been aggravated during the reaetion sinee armistiee days. In spite of all, this, however, the farmer is doing his best to feed the world today, as for ages past. But, hampered as he is by present eonditions, the utmost the farmer can do is inadequate to produce the world's food.

DAYLIGHT REPEAL DEMANDED

"Repeal of the daylight saving law in Massaehusetts will inspire farmers to greater eourage in their eontest with nature. It will renew their confidenee in the people who consume their produets. This improved morale will be reflected in mueh larger produetion than otherwise is possible.

"In its broader aspeets, the wastage of daylight by mis-ealled daylight saving is only one phase of the age-long failure of the eity populaee to recognize agrieulture's true plaee. Babylon, Nineveh, Troy, Tyre and other eenters of population and of so-ealled eulture perished beeause the agrieulture of their baek eountry languished. The Roman Empire fell for the same reason, with its aeeompanying degeneraey and folly, of whieh our present eiviliza-

tion is too close a counterpart. American history must not be allowed to repeat the error of past ages.

"Again, from the standpoint of the public revenue, neither daylight saving nor other artificial burden should be placed upon agrieulture. In the last analysis all wealth comes from the soil, all taxes come out of the land. Taxes may be varied, they may be called by other names, but whatever their form of nature they must be paid by the soil and by human labor. The huge debts ereated by the world war add to what land and labor previously bore a burden of principal and interest gigantie beyond comprehension. All this must be paid by land and labor. Probably a falling market will confront the products of land and labor within a few years. Beware of a repetition of the economic readjustment following our civil war.

TERRIBLE BURDEN ON FARMS

"Wheat was worth about $1.50 a bushel at the close of the civil war, whieh left us a national debt of about $3,000,000,000, so that 2,000,000,000 bushels of wheat would have paid it. Thirty years later, after $2,000,000,000 of the original debt had been paid, and perhaps twice as mueh or more in interest, the outstanding debt was $1,000,000,000, but wheat was half a dollar a bushel. It would still take 2,000,000,000 bushels to pay that debt, so that farmers had not gotten ahead one step in all that time so far as paying off that debt.

"Today the United States has an indebtedness of probably $25,000,000,000 in excess of colleetible bills owing from its allies. What a erushing burden upon agriculture and other industry, especially if wheat should fall from $2 or $3 a bushel to $1. Wheat is here mentioned simply as a measure of the debt-paying power of land and labor. As retail prices of flour, sugar, hay and other produce are higher now than at the close of the civil war, with a debt eight times as great, may not the collapse in prices in ensuing years be even more serious than those which brought on the panic of 1873 and the agricultural depression of the 20 years that followed?

"Housewives and government regulation (the latter applied more drastically in agrieulture than in any other industry) already have squeezed out about all of the farmers' day-to-day profits. In the faee of all these obstacles how can farmers operate with a daylight saving handicap of from 10 to 25 per cent? If farmers do not operate because they cannot operate under the eonditions city voters would impose upon them, what then? With our war debt as a first mortgage upon his every acre, the least that state or eity can do for agriculture is to let the farmer alone and give him a reasonable chance to work out his own salvation."

Sulphur Dioxide and Saccharin

JAMES Foust, Director of the Bureau of Foods, Pennsylvania Department of Agriculture, has traced large quantities of syrup containing both saccharin and sulphur dioxide being shipped from Rochester, New York, and other places into Harrisburg, Tamaqua, Sunbury, Berwick, Bloomsburg, Hazleton, Shamokin, Wilkes-Barre, Scranton and other localities, to be used by bottlers in the manufacture of non-alcoholic drinks instead of sugar. Several hundred prosecutions have been ordered and warrants served, with more to follow.

Director Foust has called upon Dr. Edward Martin, State Commissioner of Health, asking that an embargo be placed on bottlers and dealers selling and dispensing non-alcoholic drinks containing syrup sweetened and preserved with saccharin and sulphur dioxide. He has also sought the cooperation of the State Police, and the company loeated near Wilkes-Barre has been directed to render all the assistance possible when called upon by the agents of the Bureau.

In addition, Director Foust asked Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, Washington, D.C., to seize all the "doped" syrups contaning saccharin and sulphur dioxide. Dr. Alsberg notified the Bureau that the matter will receive his immediate attention.

The special agents and ehemists throughout the State are devoting their entire time in order to break up this unlawful practice of some bottlers and vendors of soda waters who are selling their beverages containing saccharin and sulphur dioxide.

The use of sulphur dioxide, in even the most minute quantities, in the preservation of confectionery, will not be permitted by the Bureau of Foods. The recent appearance on the market of chocolate covered cherries containing sulphur dioxide has led Director Foust to issue orders to all his agents to round up and prosecute all dealers and manufacturers handling the adulterated confectionery.

Director Foust has also taken the matter up with the confectioners' organization in the State and the trade papers, calling attention to the fact that the Pennsylvania food laws specifically prohibit the sale of any confectionery containing sulphur dioxide, regardless of the quantity.

The Bureau of Foods, in the case of Commonwealth vs. Pflaum, won a decision in the lower courts of the State and this was subsequently sustained by the Supreme Court. In this case the defendant was charged with selling marshmallow candy which contained fifty parts to the million of sulphur dioxide. The defendants' attorneys contended that there was but a faint traee of the acid in the confectionery but the courts held that its presence in any quantity constituted a violation of the law.

"The majority of the manufacturers of confectionery have announced that they will use no sulphur dioxide in eonfectionery sold in this State," said Director Foust. "The dealers who have not taken this stand will be prosecuted to the full limit of the law. A large number of prosecutions have already been ordered and more are under way. We intend to make the candy sold in this State safe for little children as well as the adults, and we are amply backed by the law to successfully prosecute manufacturers who have the mistaken idea that by using only a small amount of sulphur dioxide they can eseape. The acid is used to preserve the fruits. It is deleterious, even in minute particles, to the human body and it can have no place in the confectionery in this State."

Bread Most Essential Food

Almost a Complete Diet—Improves Health and Keeps Down Expenses

THIS is the morning of a new day for the baker.

Aroused to the importance of bread in the diet, Amerieans are buying and eating more bread today than they did yesterday, and they will buy still more tomorrow.

People are beginning to be aware that bread is the only low priced good food, and at the same time the most essential of all foods. When more people learn these facts, more and more bread will be consumed.

Floyd W. Parsons in a recent issue of the Saturday Evening Post writes that one-quarter of an individual's life energy is derived from the wheat flour produets which he eats, and yet, the average American family spends only approximately one-tenth of its food budget for flour.

"Based on present prices in the Eastern market," says the writer in the Saturday Evening Post, "ten cents will now buy about 1600 calories of bread, but only 750 calories of cheese, 660 calories of milk, 600 ealories of ham, 280 ealories of beef, 255 calories of eggs and 85 calories of oysters. The question arises: Should we eat more bread, and how much are we going to be obliged to pay for what we do consume?

"The various peoples of the earth can be divided into two classes, the bread eaters and the rice eaters. The latter were onee the leaders of civilization, but for two thousand years the bread eaters have been forging further ahead, and today wheat is the great cereal food of the most progressive nations on earth.

"The Japanese, who were onee rice eaters are fast becoming a bread eating people. They have been called to grasp the advantages of a wheat diet, and have learned that the character of a nation is effected by the character of the food the people consume.

Bread is Chief Food

"Since bread is now the chief food of the leading nations, its future is a matter of eoncern to everyone. Here in the United States corn is our greatest crop, but wheat is the one cereal most vital to human existence.

"Whether the government fixes the price of wheat or not, we may as well abandon all hope of eheap flour for some time to eome," the writer says further. But this does not indicate that the priee of bread must remain at the same level, if wheat coutinues to sell at $2.26 a bushel, (last year's erop guarantee) or even more per bushel .

"Our average wheat crop for the last ten years is totally less than 750,000,000 bushels. The largest crop ever produeed, was gathered in 1915, and amounted to 1,025,801,000 bushels. It is plain therefore, that notwithstanding the acreage planted last year, and the government guarantee of $2.26 a bushel, the output of wheat though higher than the average production, was less than has been already produced.

"If the European nations demand 800,000,000 bushels to cover their needs as forecasted, it is eertain that no surplus will be left from the world's last wheat crop, to carry forward a factor of safety against next year's emergeneies. We have before us therefore a condition that practically insures a wheat deficit in eertain parts of the world, in the immediate future.

"Last year, our American farmers planted 12,000,000 acres in excess of the area planted two years ago. Yet after shipping to foreign nations even a part of what these countries demand, we are confronted with a shortage in our domestic markets."

While this investigator of the wheat situation holds out so little hope for reduction in the cost of wheat to the baker, he offers to the publie as a solution to the high eost of living "More Bread."

Along the lines whieh the Fleisehmann Company, U. S. A., manufacturers of Compressed Yeast, have molded their propaganda of the necessity, the value, and the low cost of bread through earefully planned advertising, based on extensive research, this author says:

"What people of the nation eat is as much a matter of habit as of taste, only too often we encourage a desire for things we should not afford, and permit ourselves to eultivate an indifference towards foods that are not only more nutritious, but that are easily within our means. Bread is without doubt the cheapest and most healthful food that ean be produeed for human consumption.

What We Consume

"The United States consumes about 375 pounds of wheat flour per person per year, which is approximately one pound of wheat per person per day. Of this consumption here in America, abont sixtenths of a pound per person, per day is eaten in the form of bread.

"One reason why bread is not more popular is because the art of baking has not been developed in our homes and bakeries to the extent it should have been. Seience has now come to the rescne, and the art of baking is being ordered by the chemist in the laboratory and the engineer who designs complicated machinery to supplant hand methods and hit or miss guessing.

"The modern baker has learned this fact from experience and therefore is aware that the only reliable standard of measure is weight.

"Another draw back to home baking is the lack of knowledge of the average cook coneerning the temperature of the oven of the kitchen range that is used. Bread that is insuffieiently baked is a health menaee.

"Bread comes the nearest of all foods to furnishing a eomplete diet, and if used to a greater extent in the majority of our homes would improve health and reduce expenses. All kinds of wheat bread, if properly baked are quite well digested and deserve a place in our diet that will insure at least as large per capita consumption in this country as at present among the nations of Europe."

A Resolution Passed by the International Cottonseed Crushers' Association at Its Convention in New Orleans, May, 1920

"RESOLVED, That the Interstate Cottonseed Crushers' Association deprecates the attempts which are now being made in varions states to repress by unfair taxation the legitimate sale of butter substitutes in which Southern products, sneh as eottonseed oil and peanut oil, find an outlet to the consnmer, and in this connection endorses the enaetment of a law by the Congress whieh will permit the free competition between butter and butter substitutes, and endorses H. R. 13593 introduced in the House by Representative Dyer of Missouri, which bill will, in our opinion, if enacted, do justice to Southern products as well as to butter."

Department of Agriculture Assumes Tea Inspection

THE act to prevent the importation of impure and unwholesome tea heretofore enforced by the Treasury Department will now be under the jurisdiction of the United States Department of Agriculture, as the result of recent legislation in the act making appropriations for the Department of Agriculture. Mr. George F. Mitchell, the supervising tea examiner and his staff of tea examiners, will be transferred from the Treasury Department to the Department of Agriculture. Mr. Mitchell will continue to have immediate charge of the tea inspection service, carrying on the work under the general supervision of Dr. C. L. Alsberg, Chief of the Bureau of Chemistry, who also administers the Federal Food and Drugs Act.

In order to make tea of good commercial quality, the leaves used must be only the young leaves that grow near the ends of the twigs. If leaves are taken from farther down the plant the quality is lowered, and while the tea's purity is such that it could not be excluded under the Food and Drugs Act, the quality is so affected that it can be excluded under the Tea Inspection Act. The two lines of work, however, are similar and it is believed that better results will be obtained by placing the enforcement of the Tea Inspection Act under the Bureau of Chemistry of the Department of Agriculture, which all along has been charged with the enforcement of the Food and Drugs Act. The plan is to take over the organization practically intact from the Treasury Department. Tea inspection offices are maintained at the ports of New York, Boston, Chicago, St. Paul, Tacoma, San Francisco, and Honolulu.

A United States Board of Tea Appeals will be appointed by the Secretary of Agriculture from among the employes of the Department of Agriculture according to one of the provisions of the act transferring the tea inspection service. The United States Board of Tea Appeals will have all the powers and duties granted by the original tea inspection act and its amendments to the Board of United States General Appraisers. The principal duty of the Board of Tea Appeals is, as its name suggests, to consider appeals from the trade regarding the decisions of the tea examiners. The Board of Tea Appeals is authorized by the act to obtain the advice of such tea experts as may be necessary to assist it in passing upon the appeals. No change is at present contemplated in the procedure for making appeals or in the manner of considering appeals.

The transfer of the tea inspection service to the Agricultural Department was made upon the joint recommendation of the Secretaries of the Treasury and of Agriculture. Since there is no duty on tea, and since the Department of Agriculture is charged under the Food and Drugs Act with the examination of all imported foods and drugs, including tea, it was thought that the enforcement of the tea inspection act was more closely related to the Department of Agriculture than to the Treasury Department. Tea is subject to the provisions of both the Food and Drugs Act and of the tea inspection act. The Food and Drugs Act covers only adulteration or misbranding, but the tea inspection act includes consideration of both quality and purity.

Only Minor Changes in Regulations

The new tea regulations issued by the Secretary of Agriculture under this act went into effect July 1, 1920, and are about the same as the former regulations enforced by the Treasury Department, except that the regulations have been rearranged as a matter of convenience. The new regulations will give even quicker releases on tea, where no dutiable coverings are involved, than are now given at ports where tea examiners are stationed, because the uniform chop list submitted in duplicate by the importer direct to the tea examiner will serve as a release permit after it has been signed by the tea examiner and returned direct to the importer or his agent.

The most important changes in the new regulations are embodied in Regulations Nos. 10, 11, and 12, which correspond in part to Regulations Nos. 2, 3, and 4 of the regulations before in force under the Treasury Department.

Regulations 10, 11, and 12 of the new regulations, which are of especial interest to the tea trade, follow:

Reg. (10) The examination of teas at ports where a duly qualified tea examiner is stationed shall be made by means of samples drawn by the sampler from packages designated by the tea examiner. The importer, when his teas are ready for sampling, shall submit in duplicate to the tea examiner a chop list and release permit (T. I. S. Cat. No. 1) of the several lines included in the invoice, and the tea examiner shall select for examination packages representing the different lines.

The examination and report upon such samples shall be made in accordance with the provisions of section 7 of the above act, and the result of this examination shall be noted on the invoice by the tea examiner before he returns the invoice of the collector. The tea examiner at the same time should make his returns on the original copy of the chop list and release permit (T. I. S. Cat. No. 1) which after being duly signed by him should be forwarded by him to the importer or consignee.

In case the tea coverings are dutiable, the tea examiner shall follow the same procedure as above, except that the chop list and release permit shall be returned to the collector of customs for such action as he sees fit to take.

In case a partial release is desired, the importer shall furnish an additional chop list and release permit (T. I. S. Cat. No. 1) of the goods that he desires, the original chop list and release permit being retained by the tea examiner until action on all the teas in the entry has been taken.

Reg. (11) In case an entry of imported tea shall be made at a port or subport where no tea examiner is stationed, the importer should prepare the chop list and release permit (T. I. S. Cat. No. 1) in triplicate and forward them to the chief officer of the customs at the port of entry. The importer will also furnish the chief officer of the customs at such port samples, with a sworn statement that the samples submitted by him are drawn from packages designated by the chief officer of the port, and covered by his entry (naming the vessel),

and that, to the best of his knowledge and belief, they represent the true qualities of each and every part of the invoice (including the proportion of dust), and aecord with the specifications contained therein. Duplicate samples shall bc obtained by such officers, and both sets of samples, along with thc original and one copy of the chop list and tea release permit (T. I. S. Cat. No. 1), shall be forwarded to the nearest qualified tea examiner for his report and return. Samples sent for the purpose of examination from ports of importation to ports where tea examiners are located shall be packed in perfectly new tin cans, cylindrical in shape, 2½ inches deep, 3 inches in diameter, of a capacity of 4 ounces, with tight slip covers properly labeled and properly "seasoned," according to the customs of trade.

Reg. (12) In all cases the importer shall indicate on the chop list and release permit where the goods are to be sampled, whether on the dock or in warehouse.

If the eonsular invoiee has not been received, the importer may prepare an additional copy of the chop list and release permit as a pro forma invoice, marking aeross the face thereof "Pro forma Invoice."

Importers may print their chop list and release permit forms, provided they conform strictly with the official form (T. I. S. Cat. No. 1). Otherwise, they can be obtained free from the United States Tea Examiner at ports where tea examiners are stationed, or from the chief officer of customs at ports, or subports, where no tea examiners are stationed.

Filling Out Chop List

Importers in filling out the chop list should note that the space provided on the left lower side of the Chop List and Release Permit (T. I. S. Cat. No. 1), for transmission to the tea examiner will only be signed by the chief officer of the customs at ports or subports where there are no tea examincrs stationed. At ports where tea examiners are stationed the chop list and release permit will go direct from thc importer or his agents to the tea examiner.

Oleomargarine Licenses

ALL licenses to dealers for selling oleomargarine expired June 30, at whieh time renewals of application for license were filed by those persons who have come to realize that the oleomargarine trade has established itself as a year-around business. Merehants should refrain from permitting their lieenses to lapse during the summer months, thus retaining their identity with their trade and enjoying a regular oleomargarine business, even though this may not be as large as during the winter months.

Oleomargarine is recognized now as a staple product. The demand for it in thousands of families does not stop with the coming of warm weather and the merchant who does not have oleomargarine available to satisfy the demands of his customers is likely to find them going to the store of his competitor, who is more foresighted.

In making application for a license as retail dealer in uncolored oleomargarinc, it is no longer necessary for the signature of the applicant to be acknowledged by a notary public. Only two witnesses are required, aecording to government direction. The application must be filed with the Collector of Internal Revenue for the district in which the applieant resides prior to thc elose of the month in which the license is effective, together with a draft or money order, personal checks not being accepted, in the amount of 50 cents per month for the remaining months of the revenue year which ends the succeeding June 30.

Applicants for a license as wholesale dealer in oleomargarine or as retail dealer in artificially colored oleomargarine must have their signature acknowledged by a notary public or an official empowered to administer oaths. Failure to file the application before the expiration of the month in which the license is effective entails a penalty of 25 per eent, which cannot be remitted.

Doped Candy Sales Lead to Arrests

Arrests have been ordered by the Bureau of Foods, Department of Agriculture, charging the unlawful sale of candied chocolate eoated cherries, containing sulphur dioxide. Proseeutions will be instituted in Philadelphia, Luzerne, Lackawanna, Clearfield and Dauphin counties.

Director James Foust states that the agents and chemists have uncovered a condition requiring drastic action in order to protect the health of the consuming public, in partieular children.

The agents have been direeted to purchase samples of candied chocolate coated cherries and glace fruits wherever they are found on sale. When sulphur dioxide is found by the chemists criminal proceedings will be promptly instituted. The Director further states that sulphur dioxide finds its way into the confectionery by being used as a preservative in the fruits. This is particularly true with reference to glace cherries and pineapple. Candy manufacturers and dealers who sell candied chocolate coated cherries and glace fruits take a chance and sell such prodnets at their peril.

Many Farmers Growing Sorghum

A marked increase in the production of sorghum syrup is indicated by reports received by the United States Department of Agriculture, which has been engaged in a special campaign to induce greater production of this crop beeause of the keen demand for sugar substitutes. At the beginning of the World War the annual yield of sorghum syrup in the United States was approximately 13,000,000 gallons. This has increased steadily until for the past year it was approximately 30,000,000 gallons. The average yield of syrup per aerc has been about 100 gallons, but the fact that this figure can be increased is indicated by the department's experiments, in which more than 400 gallons per acre have been produced in some localities.

In urging increased plantings to sorghum the department's experts point out that despite the increasing yields the demand is still greater than the supply, as shown by the price for syrup, which has ranged from 90 cents to $1.50 per gallon, and in a few cases even higher.

There are abundant opportunities for increasing the sorghum production, the experts say, since this crop can be grown in every State in the Union with the possible exception of Maine. In the northern States it is necessary to plant early-maturing varieties of sorghum. "Early Amber" and "Folgers" are among the varieties recommended by the department, which is prepared to supply inquirers with full information regarding thc cultivation of this profitable plant.

THE FEDERAL SLACK-FILLED PACKAGE BILL

THE above named bill (H. R. 10311), although favorably reported by the House Committee on Agriculture, failed of passage by either branch of Congress before the adjournment.

This bill seeks to amend the Federal Pure Food Law by making illegal the sale or shipment of food "in a container so made, formed or shaped as likely to deceive or mislead the purchaser as to quantity, quality, size, kind or origin of the food therein," or "the package be not filled with the food it purports to contain."

The Federal Trade Commission has recently had under investigation the sale of butter in cartons weighing 15 ounces, and a number of butter manufacturers at a meeting with a representative of the Trade Commission adopted resolutions condemning such practices as deceptive, in that buyers are likely to conclude that the carton contains a full pound.

The bill is undoubtedly intended to prohibit such practices, and we believe, in principle, it has the support of all reputable manufacturers.

There is just one objection to the bill—it is indefinite. It leaves a great deal to individual judgment. Whether size, shape or form of the package is likely to deceive or mislead the purchaser may often be a debatable question, depending on the viewpoint of the person concerned. Manufacturers having large investments in food containers and machinery to make them should be able to accurately determine from the words of the statute itself whether or not such containers are unlawful.

If the bill can be made definite and certain, we believe all reputable manufacturers will endorse it and that it will become a valuable amendment to the Pure Food Law.

ARMOUR AND COMPANY
CHICAGO

5502

Red Cross Corners in Garden Plots

The city of Baker, Ore., is to have an emergency vegetable cellar this coming winter! And this vegetable cellar will be achieved in the simplest, easiest manner.

On some of these summer afternoons, Mr. Business Man, Mr. Banker or Mr. Lawyer may go home a little early from the office, in order to hoe the potatoes or tie up the tomato plants in his vegetable garden. And when he does he will hoe a few rows of potatoes or tie up a few tomato plants for Baker's emergency cellar.

For each citizen of Baker who is the proud possessor of a real garden has been asked by Miss Burrows, the executive secretary of the Baker Chapter of the Red Cross, to reserve a corner of his garden plot for the Red Cross. In this way Miss Burrows plans to inaugurate a Red Cross vegetable cellar in order to supply indigent families during the winter with vegetables.

This supply is to be used only for emergency cases, when the welfare of the recipients demands a diet of vegetables.

The scientific study of food and the application of diet to health is one of the questions which is creating general interest at this time all over the country. And the importance of fruits and vegetables in the diet can never be too strongly emphasized. They are no longer to be considered as luxuries but must be regarded as necessities. For while they do not in moderate quantities have direct medicinal effects, they without doubt "encourage the natural process by which several remedial processes are brought about," according to one dietitian expert.

The American Red Cross has had for many years a Bureau of Dieteties which supplied information regarding food, its preparation, its value, and its function as a foe to disease; during the war the subject was deemed so important that dietitians were assigned to regular service in army and navy hospitals. From National Headquarters now comes additional dietetic outlines which can be adapted to any standard text and should be of definite practical value to every home. One of these outlines deals with the importance of vegetables in the daily diet and says, among other things:

"(1) All vegetables and fruits contain valuable mineral matters. These are needed by the body to keep the blood in proper condition, to build bone and tissue (a process never finished), and even to make the heart beat.

"(2) All fresh vegetables and fruits furnish the water-soluble vitamine. Leaf vegetables, such as greens and cabbage, supply also the fat-soluble vitamine necessary for growth and health.

"(3) The very bulkiness of vegetables and fruits, as well as their acids, makes them laxative foods.

"(4) Iron, calcium (lime) and phosphorus are not likely to be sufficient in the diet unless plenty of vegetables and fruits are eaten."

The body has often been compared to an engine; like the engine, it must be supplied with conditions necessary for the production of force, and there must be a perfect adjustment of these conditions to the needs of every human machine. Not so very long ago, diet as a factor in the treatment of disease was accorded little or no consideration. Now physicians are agreed that the rational method of treating and preventing disease is by careful attention to diet, hygiene, and sanitation.

Sea Moss as a Food

By CHRISTINE EMORY

IT is related that during a long and bitter famine some dwellers along the Irish coast, in their extreme hunger and desperation, gathered quantities of the moss which grew upon the rocks that were within their reach at ebb tide. The legend further states that they boiled kettles full of this hitherto unused sea growth, and drank the resulting liquid, for food. As a sequel, it became their sole dependence, not only enabling them to withstand the exhaustion of famine and the scourge of illness, but proving so beneficial that they gained in health and strength to a remarkable degree.

Their experience was destined to become a living, vital memory, for from thankful hearts they passed the tale on to posterity, never ceasing to give thanks for "The gift of a bountiful Providence that had sent them bread out of the very stones."

So thoroughly had they learned to value this new food, and so deep was their gratitude, that even in the more affluent times when the oats throve and the potatoes failed not, they still clung to the food that had been their sustenance and their salvation.

With the re-establishment of their dairy herds it became the custom to cook the moss in milk, thereby adding to its palatability and richness. Fruits and flavorings were later added with such gratifying results that the fame of this new delicacy spread far inland, and a brisk trade was established for the purpose of supplying the interior parts of the island.

The demand quickly outgrew this modest beginning, extending to other parts of the empire; and incoming emigrants speedily brought the demand for this food to our shores.

Increased consumption and an intelligent study of the situation practically revolutionized the crude manner of carrying on this industry. Great improvements have now been made in methods of preparing the moss for table use, when we contrast them with the first primitive attempts of a despairing people to use it as a food.

It is no longer necessary for us to buy this moss in its bulky form as it came from the drying beds of Europe; for all of the preliminary work has been done for us. We of today can buy this wholesome natural food in a concentrated form; and its preparation is the work of moments rather than of hours.

War-time conditions and the scarcity of tonnage prevented the importation of foreign moss during the past few years. Our own infant industry then lifted its head, and we became aware of the fact that our scientists had discovered a similar edible moss—a superior growth of pure white flowery seaweed — not only good to look upon but nutritious to the last degree. This edible moss which grows along the rocky New England coast, and is, therefore, a home grown product, has not only saved the day, as it were, but has continued to supply us with an important and a valuable food.

Growing upon the submerged rocks, the supply of moss is governed largely by climatic conditions. Calm weather is naturally conducive to the growth of the plant. Should the winter be a severe one, the gales and drifting ice tear the moss from the rocks and it is swept out to sea, enormous quantities of food being thus lost.

The harvest is usually started in May or June, and the moss is gathered and spread in bleaching beds arranged along the shore inlets. The process of curing is one requiring care and experience, as no chemicals are used in the bleaching.

When thoroughly dried, the moss is shipped to the factory, where it is put through a process of brushing and cleansing which removes any impurities or foreign substances. A process of de-hydration then prepares the moss for grinding, which is of itself a tedious and expensive operation.

This process has been perfected through much study and painstaking effort; the devices now employed being so highly ingenious that they are almost human in their method of work and transform the moss from its bulky dried state into a fine white powdery form that readily dissolves, thus eliminating long periods of cooking and constant stirring.

Under the old method of manufacture the moss had a too pronounced sea odor and flavor that proved objectionable to many people. Modern science has toned this down with a cereal blending giving us a food that has just the right tang of the sea and which is alike irresistible and invigorating.

Being entirely vegetable it is to be chosen in preference to animal products in many cases. Because of this it is indispensable in the sick room or the nursery, and eminently desirable for all members of the family.

As it is of a gelatinous nature it is of value in any preparation where gelatine can be used, and in innumerable instances is highly satisfactory where gelatine has little or no food value; for we must remember that unlike gelatine, this pulverized sea moss supplies us with a high percentage of nutriment in a most attractive form.

A cupful of hot sea moss is a most refreshing "pick me up" at the end of a fatiguing day, for, added to its refreshing and stimulating qualities, there is a body building substance that is soluble and instantly available.

The combination of cereal blending further increases the range of use, so we not only find it unrivaled as an infant and invalid food, but well adapted to everyday use in the home, where it can be used in the form of blanc mange, custards, jellies, muffins, puddings, sauces, pancakes, soups and beverages.

This prepared sea moss is more nourishing and far more economical than many of our well known farinaceous foods and the flavor is distinctly individual and unlike any other.

So highly concentrated is this food that two teaspoonfuls will provide sufficient material for thickening one quart of liquid to custard-like consistency.

So thorough are its thickening properties that the caution NOT to use more than this amount of the powdered product to one quart of milk is fully justified; for when more than this proportion is used the fine flavor is lost and the texture of the product is injured.

Sea moss is a food that will steadily gain in favor, and in the degree in which we utilize this product shall we aid our domestic industry and at the same time solve helpfully and happily, a portion of the high cost of living problem.

Investigation reveals the fact that this preparation of sea moss is used in the manufacture of many of our most delicious commercial ice creams; being a satisfactory and uniformly used "filler," producing a smooth, well flavored cream which the discriminating public quickly and eagerly demands.

—Table Talk.

HEBE

—a distinctive food product with its own special uses

An Auxiliary to the Daily Milk Supply for use in Cooking and Baking

HEBE is pure skimmed milk evaporated to double strength enriched with cocoanut fat.

HEBE is all that a good food should be—wholesome, nutritious, economical. It contains all the food elements of pure skimmed milk—proteins, carbohydrates and mineral salts—plus the heat and energy units of highly refined cocoanut fat. It is produced under sanitary conditions, sterilized in the hermetically sealed can, and reaches the consumer pure and wholesome.

HEBE is correctly labeled, truthfully advertised and properly marketed, conforming with all Federal and State food regulations. It is recommended for specific uses—as an ingredient in cooking and baking. As the label plainly states, HEBE is not to be used in place of milk for infant feeding.

The relation of HEBE to the food situation of today is discussed in two booklets—"Today's Food Problem" and "HEBE—Its Dietetic and Economic Value". Copies will be sent on request—address 2709 Consumers Bldg., Chicago.

THE HEBE COMPANY

Chicago **Seattle**

Warning That Jamaica Ginger is Being Sold in Violation of the Prohibition Laws

National Association of Flavoring Extract Manufacturers Says Some of Its Members Are Breaking the Law in This Respect, as Well as Some Non-Members—Every Grocer, Is Interested, Because He, if Anyone, Will Distribute the Unlawful Goods

THAT flavoring extracts, Jamaica ginger, etc., are being used to circumvent the prohibition law has been recognized by the Flavoring Extract Manufacturers' Association of the United States. The organization has issued a solemn warning to its members that some of them are not doing a square business, and warning all such that they would find themselves in trouble if they continued it. A portion of the statement is as follows:

"The officials of this association are continually receiving complaints and reports from many of its good, law-abiding members to the effect that there are firms manufacturing and selling flavoring extracts who are apparently disregarding the provisions of the National Prohibition Law and the rules and regulations that have been made for its enforcement, and who are going ahead and selling extracts, particularly essence of Jamaica ginger, in a manner that is in utter disregard of the regulations and the law.

"These firms are reminded that they are not only placing themselves in a position where they are liable to have their permits to purchase alcohol for any purpose cancelled for one whole year (thereby putting them out of business) also liable to a fine or possible imprisonment, in addition to having to pay to the Government heavy additional taxes on the alcohol they have used, and other special taxes (thereby taking from them all profits they may have made), but also placing the flavoring extract manufacturing industry of the United States in jeopardy.

"The officers of the association wish to advise the membership at this time with regard to the sale of flavoring extracts, particularly Jamaica ginger, that if any member of this association is proven guilty of having willfully disregarded the law and regulations of the prohibition officials, and the repeated warnings sent out by this association against the sale of flavoring extracts for improper purposes, such members will be dealt with by the executive committee as severely and unceremoniously as it lies within the power of the committee so to do. Such member will not only be denied the privileges, advice and assistance of the association, and expelled from the organization, but will be dealt with in other ways.

"As to firms that do not belong to the association, and who disregard the law, the executive committee will take steps to see that they are dealt with by the Government officials who are in a position to reach them and deal with them, according to the law."

This should particularly interest grocers, because the unlawful schemes of the manufacturers referred to above cannot be consummated except with the equally unlawful aid of the retail grocer. There is no doubt that there are today quite a number of unlawful brands of extracts, Jamaica ginger, etc., on the market. Grocers can keep clear of them by being particular from whom they buy.

News Item from the National Research Council

[From the Secretary's Office, 1201 Sixteenth Street, Washington, D. C.]

THE National Research Council, a co-operative organization of leading scientific and technical men of the country for the promotion of scientific research and the application and dissemination of scientific knowledge for the benefit of the national welfare, has elected the following officers for the year beginning July 1, 1920: Chairman, H. A. Bumstead, professor of physics and director of the Sloane physical laboratory, Yale University; First Vice-Chairman, C. D. Walcott, president of the National Academy of Sciences and Secretary of the Smithsonian Institution; Second Vice-Chairman, Gano Dunn, president of the J. G. White Engineering Corporation, New York; Third Vice-Chairman, R. A. Millikan, professor of physics, University of Chicago; Permanent Secretary, Vernon Kellogg, professor of biology, Stanford University; Treasurer, F. L. Ransome, treasurer of the National Academy of Sciences.

The Council was organized in 1916 under the auspices of the National Academy of Sciences to mobilize the scientific resources of America for work on war problems, and reorganized in 1918 by an executive order of the President on a permanent peace-time basis. Although co-operating with various government scientific bureaus it is not controlled or supported by the government. It has recently received an endowment of $5,000,000 from the Carnegie Corporation, part of which is to be expended for the erection of a suitable building in Washington for the joint use of the Council and the National Academy of Sciences. Other gifts have been made to it for the carrying out of specific scientific researches under its direction.

DIET AND CEREALS

PREPARED cereals or breakfast foods are as a rule "nutritious, cleanly products, containing the greater part of the nutriment of the grain, and in some cases all of it," says Dr. Wiley. "They are put up in a sanitary package and are convenient, and afford variety. You do not get any where near as much nutrition for the same amount of money as when you buy the simple grains, such as whole wheat, cornmeal, oatmeal, etc. in bulk. If you realize this, however, and are willing to pay for the convenience and variety, there is no reason why they should not be used. The cornmeal and oatmeal are somewhat heavy and heating, so that unless a person is doing heavy, physical work, it might be well to use a less concentrated food. The whole wheat and the old fashioned oatmeal and cornmeal can never be surpassed or equaled as wholesome economic foods, giving the greatest amount of nutriment for the smallest amount of money. It must be remembered that the amount of nutrition present is not the only point involved in wholesomeness and the coarser form of the natural grains and the presence of bran have a beneficial effect upon the bowels as well as furnishing additional mineral ingredients. Nevertheless the moderate use of the package cereals is an undoubted boon under our present conditions of life and they may fill a valuable and convenient place in the dietary if not used exclusively."

FEDERAL TRADE COMMISSION DISMISSES MOTIONS

The Federal Trade Commission announced that its formal complaint of unfair competition against the National Biscuit Company, New York City, has been dismissed by the Commission upon its own motion.

The trial of the case developed that the National Biscuit Company practices a method of competition in interstate commerce generally known as the "cumulative quantity discount," that is to say, deducts from the price of goods purchased from it, a discount rate established by it upon condition that such purchaser shall have bought within a given period a certain quantity of goods, which method of competition was alleged in the Commission's complaint to have the intent and tendency of an exclusive dealing contract. It appears in this case that the company confines the calculations of the quantity discount allowances to periods not in excess of one calendar month and that, therefore, the tendency of such practice to create an exclusive dealing relationship and to restrict competition is negligible.

The complaint was dismissed upon the foregoing facts, without prejudice to the right of the Commission to rule against the cumulative quantity discount principle when applied to a different state of facts.

The Federal Trade Commission also announced that after full hearing and trial orders have been issued requiring C. H. Kroneberger & Co., and the Levering Coffee Company of Baltimore, Md., and the John H. Wilkins Co., Inc., of Washington, D. C., to refrain from certain methods of competition in the coffee and tea trade.

The Commission's inquiry showed that in consideration of the loan of coffee urns from these concerns, many proprietors of cafes and restaurants were "tied up" by contracts requiring them to purchase their supply of coffee from the firm making the loan of the urn.

Under these orders which finally dispose of the Commission's complaints, the Kroneberger, Levering and Wilkins Companies must discontinue the loaning or leasing of coffee urns to customers upon condition that their customers will thereafter purchase from these firms all of the coffee used by such customers.

Preserved Foods

(*Continued from page 22*)

sults obtained and would relieve the manufacturers of large scale experimentation. The Oregon Agricultural College has already taken this very important step and has equipped an excellent semi-industrial size factory for all important fruit products.

Conclusion: The work of our laboratory is new. We have much to learn by investigation in the field of fruit products, bnt the importance of the industries involved is now recognized and many investigators are busy upon the problems presented. We may therefore expect rapid progress and in time see these industries placed upon a sound scientific basis.

National Manufacturers of Soda Water Flavors

Office of the Secretary
1236 First National Bank Building
Chicago

June 17, 1920.

LOUISIANA

H. B. 162. By Mr. Douglas

The above bill provides that all municipal corporations shall be authorized and empowered to prohibit the sale of near beer or any other soft drinks in any residence that is not open to the public at the time said sales are made.

The above bill should be called to the attention of all parties interested.

H. B. 222. By Mr. Dreyfus.

The above bill provides that wholesale dealers in non-intoxicating malt liquors containing not more than one-half of one per cent of alcohol and having the appearance, odor, taste or quality of lager beer shall pay an annual license tax of $250. Retail dealers in the above product are assessed a license tax of $50.00 per year.

The above bill should be called to the attention of all parties interested.

H. B. 224. By Mr. Fraiche.

Under date of June 11th we sent out a report on the above bill, but through error in the telegraphic advices available at that time a mistake was made in the number of the bill, the bill being erroneously designated as H. B. *244*. The correct number is H. B. *224* as above. Please correct your records accordingly.

Yours very truly,

THOMAS E. LANNAN,
Secretary.

The COMPOSITOR DID IT

Bringing with him an electric atmosphere, the man strode into the newspaper office and banged his stick on the counter.

"Where is the editor?" he shouted angrily.

"He's—he's out," replied the clerk, nervously. "What has he done this time?"

"In that advertisement for my valveless motor," stormed the visitor, "he's turned the second 'v' into a 'u'!"—*New York Globe.*

SAUER'S
PURE FRUIT
FLAVORING EXTRACTS
FOR
PURITY STRENGTH AND FINE FLAVOR
WINNER OF 17 HIGHEST AWARDS AT AMERICAN AND EUROPEAN EXPOSITIONS
LARGEST SELLING BRAND IN THE UNITED STATES
32 FLAVORS AND OLD VIRGINIA FRUITTI-PUNCH
The C.F. SAUER Co
RICHMOND, VA.

Look for Price's Tropikid on the label.

PRICE'S VANILLA

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Human Food Supply

(Continued from page 15)

$680,000,000 annually due to sickness among these workers, shall be largely eliminated. The children of this nation have a right to be served with food that will bring them into vigorous manhood and womanhood. All the people everywhere, the humble and the great, the rich and the poor, have the right and are now demanding the right to be served with wholesome food, prepared in harmony with the scientific truth of the age, in clean and attractive plants, by clean and contented workers and so certified by a responsible agency.

It does not seem to be within the bounds of reason, or expediency, or justice, that the food distributors of this nation should withhold their full approval and helpful co-operation from a movement so intelligently conceived, so soundly grounded upon science and truth, and so manifestly to the advantage of the private and public well-being of the people. The men who have staked upon the success of this program their fortunes and good names are looking forward confidently to such approval and co-operation. If, for any reason, they should be disappointed it is only fair that I should say that they have committed themselves irrevocably to the renaissance of a nobler and better day in the production and distribution of canned foods. They have placed their hands to the plow. There can be no turning back. They are prepared to rest their case in the hands of the public, the 110,000,000 consumers whose rights and desires we jointly serve.

Dehydration

(Continued from page 18)

in the trade, including several of the faculty of the University of California, have decided to differentiate hereafter when describing dried fruits. When such fruits have been dried in the sun they will be called "sun-dried"; when they have been dried artificially they will be called "evaporated" or "dehydrated."

The general subject of dehydration is inexhaustible. It is just coming to the front and is bound to help solve the world's living problem at just this important time and for the future. When the high cost of tin for canning is considered, when the shortage of freight cars everywhere is taken into consideration and adding to this the fact that heretofore, according to United States statistics, only 56% of our crops brought to maturity have gotten into consumption (the balance having rotted or been wasted through various causes), it is obvious that dehydrates is *the* factor that will hereafter bring down and help to hold down the high cost of living. Dehydration is a boon to creation.

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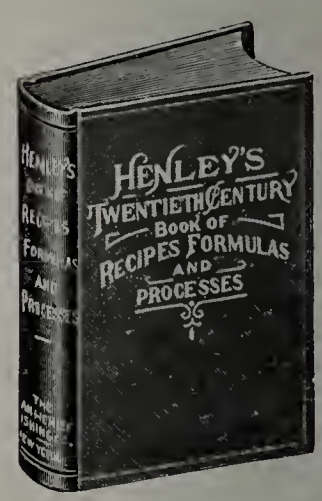

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Amendment to Regulation 24, B. A. I. Order 211 (Regulations Governing the Meat Inspection of the United States Department of Agriculture)

UNITED STATES DEPARTMENT OF AGRICULTURE,

OFFICE OF THE SECRETARY,

Washington, D. C., April R, VTBJ.

Under authority conferred by law upon the Secretary of Agriculture, Regulation 24, section 1, paragraph 1 of the regulations governing the meat inspection of the United States Department of Agriculture is hereby amended as hereinafter set out.

This amendment for the purpose of identification is designated as "Amendment 13 to B. A. I. Order 211," and shall be effective on and after April 15, 1920.

C. F. MARVIN,
Acting Secretary of Agriculture.

REGULATION 24, *section 1, paragraph 1.*—A numbered meat-inspection stamp shall be affixed to each outside container (except cloth wrappings) of any inspected and passed meat or meat product for export, except ship stores and small quantities exclusively for the personal use of the consignee and not for sale or distribution.

Peanut Oil Output Shows Gain

COLD-PRESSED virgin peanut oil, a new American product, is becoming a formidable competitor of olive oil, say specialists of the Bureau of Chemistry, United States Department of Agriculture, who are making a study of edible oils. The fine flavor and excellent keeping qualities of the cold-pressed peanut oil make it a most desirable household oil.

The cold-pressed oil is made by a process different from that of the hot-pressed peanut oil, which until recently was the only peanut oil made in considerable quantity in the United States. The cold-pressed oil has a characteristic flavor, pronounced by many consumers to be far more delicious than the oils which are hot pressed and subjected to a refining process which leaves them practically tasteless. Cold-pressed oil when made from sound, sweet nuts need not be refined, and therefore retains its natural flavor.

This oil is highly nutritive and is as readily digestible as the best olive oils. It makes delicious French and Mayonnaise salad dressings and is a high-class cooking oil, especially when used for deep frying. Many discriminating housekeepers, who during the war turned to the cold-pressed peanut oil for table use because they could not obtain the usual supply of olive oil, found it to be so delicious and so satisfactory for table use that they now prefer it to any other.

The production of peanut oil, including both the cold-pressed and the hot-pressed, in the United States has increased from 454,000 pounds in 1912 to 95,934,000 pounds in 1918, an increase of more than 31,000 per cent. The importation of peanut oil increased from 7,626,000 pounds in 1912 to 68,466,000 pounds in 1918.

It is apparent, say specialists, that cold-pressed peanut oil is winning for itself a place on the American table justified by its flavor, nutritive value, and digestibility.

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The Perishability of the Egg

By E. J. W. DIETZ

BECAUSE the hen's egg has a hard shell covering, the average person seems to assume that it is an endurable article and will keep indifinitely. They know this shell is brittle and will break easily, but few of them know that said shell is porous and filled with minute air holes through which the growing chick can breathe and through which the egg in storage or on the pantry shelf can and will absorb odors and contaminations from the atmosphere in which it may be placed.

As we are approaching the season of heavy egg movement, it may not be out of place to call attention to some of the qualities and functions of the hen's egg with the hope of getting better results, all along the line, in handling of this valuable article of human diet.

The egg is a very perishable article. It will spoil just as quickly as milk or other animal matter, as we will see when we stop to study its purpose and functions. The egg is the seed of the hen through which the race is perpetuated. It is formed within the ovary of the hen and grows in a cluster like a bunch of grapes. With a microscope, investigators have counted over 1600 of these *o-ocytes,* as they are called, at one time within a hen, and the organ was still functioning so that it may be said a hen has the power of laying over 1600 eggs within its lifetime. These o-ocytes grow at a speed variable with the season of the year, and it is one of the mysteries of animal breeding to explain how it comes that the modern hen has so many of them, when her wild progenitor only produced a couple of dozen eggs a year, like the wild prairie fowl of today. Whereas we now have in this country a number of hens which have laid over 250 eggs within a twelve-month period under public supervision of disinterested parties. The only explanation of this wonderful achievement in the poultry world is that our early ancestors, when they crossed the fowls they brought with them from Europe with the fowls obtained from China, somehow or in some way, started a stimulation of the egg producing function, and by care and feeding management, the poultrymen of the country have been able to further increase this number from time to time through their various matings and crossing to produce birds for show or exhibition purposes.

When this *o-ocyte,* which contains the female germ and the stored nutrition for the unborn chick, which we commonly know as the "yolk of the egg," attain its normal size as we know it within the egg, it bursts its fibrous covering and drops into the oviduct of the hen. The opening of this oviduct has several short fingers which clasp the yolk and start it on it's passage through this organ. The oviduct, in the normal hen is about twenty-one inches long and performs three functions. As the yolk passes through the first third of the oviduct, it is surrounded with the white of the egg, from the walls of said organ; during the second third, it is surrounded with the thin fibrous inner covering, and during the last third, it is covered with the outside shell covering which remains somewhat flexible until it meets the outside air, when it hardens into the egg-shell as we know it in commerce.

When the hen is allowed to run with males of its species, the eggs are fertilized and this fertilization is said to take place as the yolk drops into the opening of the oviduct and the clasping of the fingers of this opening assist in forcing the male germs through the covering of the female o-ocyte. From this, it will be seen, the egg at once begins to germinate and incubation has commenced before the egg is expelled, or laid, by the hen. Hence, all eggs that have been fertilized have been partly incubated and started on the road to spoilation as far as being fit for the fastidious human taste. The unfertilized egg does not have this tendency, hence the campaign among egg producing states to "swat the rooster," and by this means eggs are produced without the tendency of being partially incubated, and thereby being started on the road to being "spoiled."

Another phase of this subject, is the tendency of certain bacterial growth to be transmitted through the blood. By careful investigations. it has been pretty well demonstrated that the bacteria which cause "White Diahhrea" in little chicks is transmitted to the chick from the fowl through the egg, as bacterial samples which will cause this disease, has been taken at several stages of this development, from the hen, the egg and the chick. Hence it is easily seen that other bacterial or fungus growths may be similarly transmitted, and this will explain the bad odors which have been found upon opening newly laid eggs.

Those who have had to do with the management of poultry on farms, know that clover or alfalfa are beneficial egg producing foods and, close observers will tell you that alfalfa will impart rich color to the yolk of eggs, just the same as when a hen has access to grass in the spring. It has been the writer's observation, that when alfalfa is fed in too large proportions to the other feeds, that there is a tendency to increase this richness of color to the extent of producing eggs with blood clots in the yolks, and that when the quantity of alfalfa is lessened, there will be a reduction of such bloody appearance and also a lessening in the color of the yolk.

From these facts and observations, it is apparent that the hen's egg has great perishability and the greatest care should be practiced by the poultryman as well as the dealer in every step of its journey from the nest to the consumer.

It is unnecessary to dwell upon the importance of the egg as an article of diet, as the persistent demand is the best argument for its value. But we cannot refrain from adding that the hen's egg is one of the most essential elements to our daily dietry and, in some cases, it cannot be replaced by any substitute, hence it is indispensable. Therefore, every one who has to do with the production and marketing of eggs, should strive to do his part to overcome the perishability of this important item of human food.

This can be accomplished, first, by "Swatting the Rooster" so as to produce infertile eggs; secondly, by keeping the nests in which they are laid clean; third, by gathering the eggs daily and keeping them in a cool place, and, fourth, by sending them to market as frequently as possible protected from the hot sun's rays. The dealer also has a part to perform and, generally speaking, knows that the quicker he can get them into the cooler, the better it is for his pocket book. By following such precautions the perishability of the egg will be conserved and greater profits will be made by all who handle them.

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Experiments in Sugar Substitutes

By CARL L. ALSBERG, U. S. Department of Agriculture

REFERRING to the possible use of sugar substitutes in the canning of Maine style corn, I will state that while the report of Mr. H. R. Smith, of our Baltimore Station, who conducted the experiments in canning at Plant City, Fla., is not yet at hand, the results of these experiments indicate conclusively that maltose syrup and corn syrup are not satisfactory substitutes for cane sugar for this purpose.

Owing to the comparatively heavy process to which canned corn is subjected and the tendency of maltose syrup to become rather dark when heated at high temperature, the samples of corn which were put up with maltose syrup as a sugar substitute were, as a rule, decidedly too dark in color to be salable. In cases where maltose syrup was used only in small amount the color of the resulting pack was, naturally, not so dark. However, when maltose syrup was used in such small amount as to avoid too great production of color, the amount which could be used was so small as to render the use of this sugar substitute inadvisable. When considerable proportions of maltose syrup were employed, there was also a more or less objectional secondary flavor which was doubtless derived from the maltose syrup.

"Unsatisfactory results were also obtained when corn syrup and solid corn sugar in granular form were used as sugar substitutes, the principal objection being the distinctly dark color developed in the pack when the corn syrup or corn sugar was used in sufficient amount to secure the desired degrees of sweetness. Experimental packs, in which corn syrup was used in varying proportions, were prepared and none of these packs were such as to justify any hope for the use of corn syrup as a sugar substitute in the canning of Maine style corn.

The use of refiners' syrup was also tried. This was the only sugar substitute tried which gave promise of successful use. The color of the resulting pack was slightly darker than that of the control pack in which cane sugar without the addition of any sugar substitute was used. The degree of sweetness was satisfactory and there was no objectionable secondary flavor. The only objection was the slightly darker color as compared with the color obtained when cane sugar alone was used. In case of absolute necessity it would appear that refiners' syrup could be used. In the experiment in which refiners' syrup was employed, this syrup was substituted wholly for cane sugar. The brine was prepared from 1.4 lbs. refiners' syrup, 0.25 lb. salt and approximately 15.35 lbs. water, so that the total weight of the brine was practically 17 lbs. This total amount of brine was added to 50 lbs. of cut corn in preparing the experimental batch. In connection with the possible use of refiners' syrup, it should be kept in mind, however, that this is not a standard article and that it varies more or less from one refinery to another, and, from time to time, in the same refinery, with respect to color and flavor. The color of refiners' syrup as marketed is dependent on the amount of surplus bone char available in the refinery for treating refiners' syrup, this being the means whereby the intensity of color is reduced.

White Sells Food Products

MANUFACTURERS of foods, particularly food specialties, have recognized that it is a strong selling point for their products to have spotless white factory interiors — ceilings, side walls, work tables and other equipment, including white uniforms for the operatives, and then to invite the public to inspect their plants and see for themselves the conditions under which the product is manufactured.

There is a paint product, made by a number of manufacturers under various trade names, that is especially designed to reflect light, incidentally cutting down artificial lighting costs, and also making the work rooms more cheerful for the employes. Is it strange, or only natural that factory operatives will do more and better work and take greater pride in what they do when their working environments are clean and pleasant than when they are dingy and unattractive?

Visitors to these spotless white food factories are introduced to the product under the very best auspices for there is something about absolute cleanliness that make a food product look appetizing.

How often do we hear a woman say, "Doesn't that look good?" and then buy some of whatever it happens to be to try it. Really the eye sells more food than the taste.

Hence a very good investment for a food manufacturer is plenty of good white light reflecting paint or white enamel and plenty of soap and water to keep the white "white as the driven snow."

This is no longer difficult of attainment, because the development of the chemically made and chemically proved pigment known to the paint trade as lithopone has enabled manufacturers to produce paint of permanent whiteness, solid covering and entirely free from all poisonous properties.

UNCLE SAM KEEPING CANDY PURE

Candy in interstate commerce, the United States Department of Agriculture tells the manufacturers, must be pure and must carry a label that tells the truth. The box or container that goes to the consumer should bear a conspicuous label showing the net weight. When the candy is put up under the name of the wholesaler or jobber, the name appearing on the label should be preceded by "manufactured for" or some such words, so that the purchaser may know that the name is not that of the manufacturer. Mixed candies labeled "fruit flavors" are misbranded if any artificial fruit flavors are used. The word "maple" or even the picture of a maple leaf must not appear on the label of confections in which no maple sugar or sirup is used. A false or misleading statement appearing on the label is not cured by a correct statement somewhere else on the label.

TP 4.5103
A M
Chem.

THE AMERICAN FOOD JOURNAL

PROF. E. F. LADD,
President of North Dakota Agricultural College.

AUGUST, 1920

A Cake of Yeast Is Better Than a Pound of Cure

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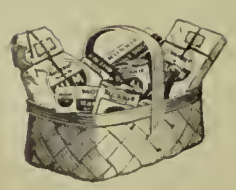

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Swift & Company, U. S. A.

THE AMERICAN FOOD JOURNAL

Vol. XV AUGUST, 1920 No. 8

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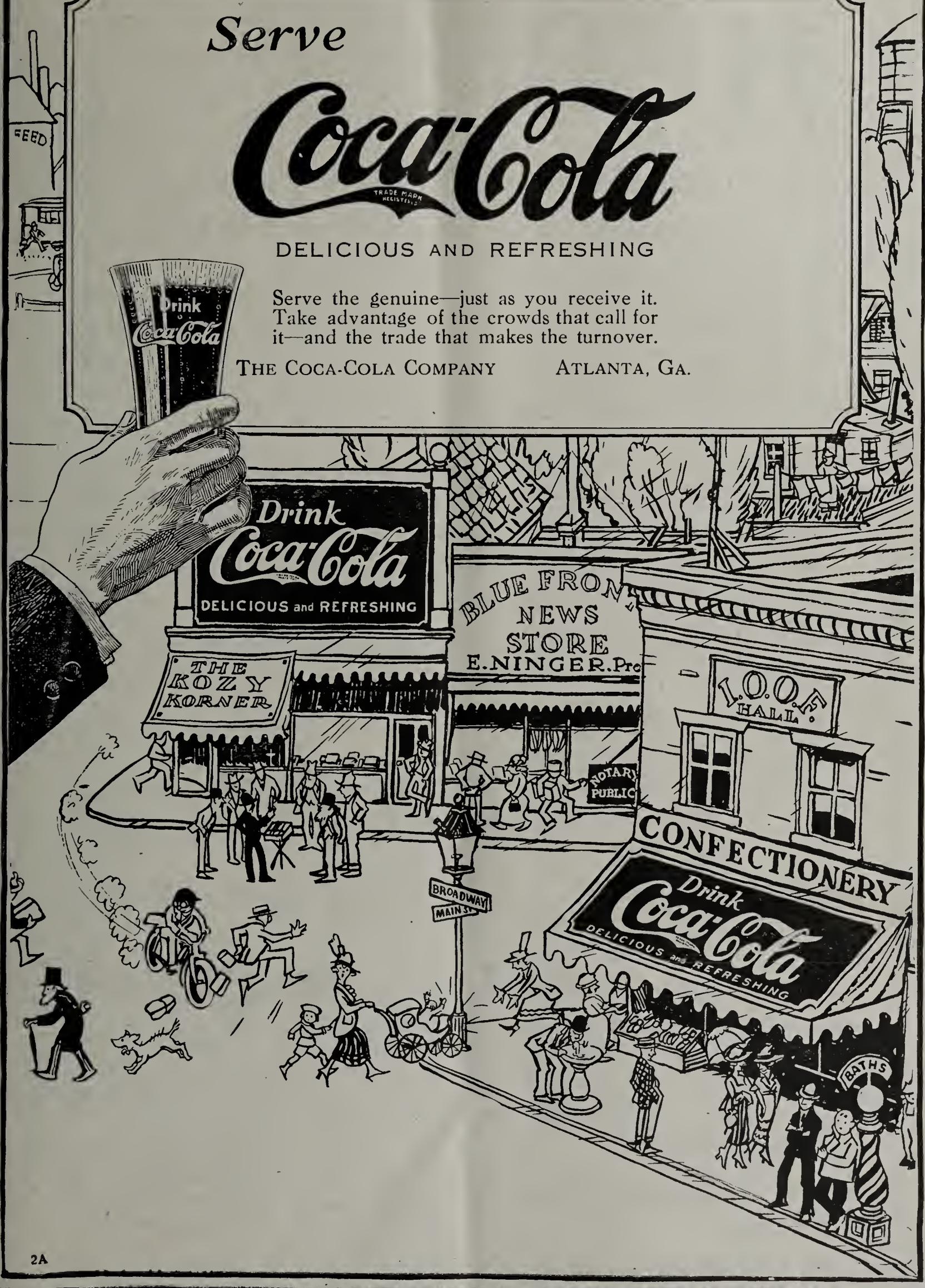

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THE AMERICAN FOOD JOURNAL

Vol. XV CHICAGO, AUGUST, 1920 No. 8

From Chemist to Statesman

IT occasionally happens that circumstances lead men into fields of activity quite foreign to their early plans and education. Such changes made for personal gain, frequently result in the stunting of the latent possibilities of the individual, but if the transition is a gradual evolution whereby a person is led onward by the light of experience and a desire to help others, that man will become a benefactor of mankind. The impression that in making such a change, all former education and experience are of no value is erroneous. Quite the contrary is true.

In the world of chemistry, of food officials and agricultural experts, the name of Edward Freemont Ladd stands for scholarship, integrity and loyal service to his fellow man. That his faithful adherence to the best principles of citizenship and the achievement of worth while things has brought him recognition which has resulted in his being nominated for Senator of the United States, is only a fitting tribute to his ability and attainments, a rendering of honor where honor is due.

It was back in the year 1884 that Dr. Ladd graduated from the University of Maine, receiving the degree Bachelor of Science. Being interested in chemistry he secured a position as an assistant in the New York State Experiment Station. There, as in all the state experiment stations, much time and energy are devoted to studies of the soil, materials which will fertilize it, making it more productive and to the crops raised thereon.

Dr. Ladd early recognized the possibilities in so essential a science and by diligent work became chief chemist of the station. In 1890, after six years' service in New York state, he was called into the fertile middle west to become dean of the School of Chemistry and Pharmacy and professor of chemistry at the North Dakota Agricultural Experiment Station. Here much pioneer work had to be done. It was a new school and experiment station far out on the northern prairies. The equipment was meager and long were the delays in securing the apparatus necessary for chemical work.

The first work, as might be expected, was the examination of the soil, determining its moisture content and keeping records of the temperature and rainfall. Within two years the station seeded more than 132 varieties of wheat.

It is to be noted in the reports of his department, as early as 1896, that he had in mind the examination and regulation of food products. This was ten years prior to the enactment of the Federal Food and Drugs Act.

In 1893 he secured the enactment of a Pure Food Law for his state. From that date to the present time he has been continuously in charge of the food law enforcement in North Dakota and said law has always been enforced without fear or favor.

Through his pioneer activity in this field Mr. Ladd gained a national reputation. Washington was astir over the thought of a National Pure Food Law, as well as many of the states. His advice was eagerly sought and his influence was far felt.

His Alma Mater, in 1915, conferred upon him the degree of Doctor of Laws in recognition of his exceptional accomplishments.

Laws regulating drugs, feeding stuffs, fertilizers, insecticides and paints followed during the next few years, which at the time caused manufacturers and distributors much uneasiness. The North Dakota paint law was considered revolutionary and Dr. Ladd was subjected to much criticism, but time has demonstrated his wisdom and the law has been not only a protection to the consumer but all honest manufacturers and distributors. He is a quiet, modest man, short in stature, a pleasant countenance and never talks unless he has something worth listening to, to say. This has helped him weather many a storm in fulfillment of the Gospel, "A soft answer turneth away wrath."

Dr. Ladd was placed upon the Standards Committee on Food Products for the United States and was appointed Federal Food Administrator for his state during the great war.

The enactment of laws covering foods, drugs and other commodities for the protection of the health of the people and for the prevention of deception, marks an epoch in the history of our country. The public thought of the Pure Food Law as a protection against harmful substances being placed in their food, and did not realize that fraud and deception constituted by far the greater percentage of violations. This brings the Law Enforcement official face to face with many economic factors and the situation right now is an economic and moral problem.

It seems providential that a man trained as Dr. Ladd has been, and a man who has a clear vision of the wrongs of society should be selected as a candidate for the United States Senate to help guide us through these trying times. Above all he is honest and fearless. The effect of his work has reached far beyond the confines of his own state, becoming national in scope.

Now, more than any other time, do the people of this country, including his own state, need his counsel and guidance in the United States Senate.

Former Food Official Receives Appointment

JAMES H. WALLIS, publisher of the Vernal Express, Utah, and president of the Utah State Press Assoeiation, has reeently been appointed exeeutive seeretary of the Utah Publie Health Association.

Mr. Wallis has had much experience in health work, being state food and sanitary eommissioner of Idaho for a number of years, also president of Assoeiation of State and National Food and Dairy Depts. On the recommendation of Governor Spry, he was appointed by Dr. T. B. Beatty to aet as judge of the elean town eontest conduеted by the state board of Idaho in 1914 and the two following years. After completing the elean town eontest work he eontinued his work with the board until 1917, when he resigned to engage in newspaper work.

A elean sehool eontest for Utah county has just been eompleted by Mr. Wallis whieh has resulted in unpreeedented betterment of health eonditions of school grounds and buildings. This is among the most valuable work he has ever done and he is certainly to be commended for the whole-souled earnestness and ability with whieh he engaged in this work so vital to the welfare of the youth of the state. The state superintendent of sehools, G. N. Child, reeently expressed his appreeiation of the work of Mr. Wallis for the schools.

At the annual meeting of the Utah State Press Assoeiation in Salt Lake City, the end of June, whieh was the largest convention in the history of the association, Mr. Wallis was re-eleeted president of the association.

Institute of Independent Margarin Manufacturers Holds First Meeting in Chicago

The first annual convention of the Independent Margarin Manufaeturers was held at the La Salle Hotel, Chieago, August 6 and 7, 1920. In a eertain sense of the word this was an epoehal meeting, demonstrating as it did the growing importanee of the margarin industry. As in all industries, the organization of the margarin manufaeturers proves its strength by its unity.

This meeting was unusually well attended for the first meeting and the addresses of the highest order obtainable. George T. Moxley, president of the Institute, made the opening address. E. M. Kelly of Columbus, Ohio, is first viee-president. Howard Beatty of Chieago is seeond viee-president; H. P. Wilkins of Chicago, treasurer; B. S. Pearsall, Elgin, Ill., reeording secretary; J. S. Abbott, Washington, D. C., seeretary.

An interesting address on the purposes of the Institute was delivered by J. S. Abbott. Myrick D. Harding spoke on the subjeet of Animal Fats while Dr. David Wesson discussed the subjeet of Vegetable Oils. W. E. Utley spoke on Shipping Cases. This was followed by a general diseussion about returned goods. Color Capsules also were the subjeet of an interesting general discussion. B. S. Pearsall spoke on the important subjeet of credit and terms. The Dyer bill, H. B. 13593, eame in for some general discussion.

A round table discussion ended the program whieh was followed by a business meeting.

Proper Fill of Cans

The United States Department of Agrieulture, Bureau of Chemistry, sends out the following explanation and letter regarding the filling of eans, to the National Canners' Association:

A number of complaints have eome in from eanners stating that they were sometimes unable to obtain the eut-out weight of drained solids ealled for in the published opinions of the Bureau of Chemistry, without erushing the produet in sueh a manner that its appearanee was injured. On the other hand some cases have eome to our attention in whieh eanners believed that the weight suggested by the Bureau of Chemistry was the legal weight though the ean was not well filled. It is of the utmost importanee that the attitude of the Bureau of Chemistry be understood and eanners are urged to give very careful attention to the following letter from Dr. Alsberg:

"In answer to your informal inquiry as to the eonditions under whieh deviations from the weights announced for the fill of cans by the Bureau would be justified, I beg to say that the Bureau recognizes the figures whieh have been expressed as indieative of the cut-out weights of full eans cannot be obtained on all produets under all conditions in every section of the country, yet the Bureau does feel that they do represent what would be a fair indication of the eut-out weight in the properly filled can under average eonditions in the country as a whole.

"You are right in your assumption that the objeet of the Bureau in the announcements whieh have been made is to insure that the eonsumer obtains a full ean as eontemplated in Food Inspeetion Deeision 144. The manner in whieh this is brought about is for the individual eanner to determine. While the Bureau reeognizes that variations must be made from the announced weights, due either to climatic conditions, state of maturity or other faetors, it nevertheless believes it neeessary in order to aecomplish its end—the delivery to the eonsumer of the full ean—to publish eut-out weights which will be applicable in most eases. It believes that only by sueh publieation ean it reaeh such members of the industry as might be disposed to take advantage of the neeessity for such variations, even when in their case no sueh neeessity exists.

"Eaeh eanner should, in the judgment of this Bureau, endeavor to reaeh the announeed weights when possible and he should eonvinee himself before packing that this is not possible. This involves not merely that in some eases will the individual eanner be permitted to drop below the announeed weights, but also that in other eases, he must exceed them. The Bureau does not regard that the publication by it of these eut-out weights which are designed to fit the vast majority of eases, eonstitutes a justifieation in the case of an individual paeker to slaek fill, if adherenee to these cut-out weights in his ease does not satisfactorily fill the ean."

Amerieans are the greatest consumers of ice eream in the world, aeeording to a report of the Department of Agriculture which shows that 511,360,816 quarts were manufaetured commereially in 1919, not to mention the enormous quantity made in home freezers:

Other phases of the country's vast dairy industry are summarized in the following figures for 1919:

	Pounds
Butter	869,055,223
Cheese (all kinds)	409,529,240
Milk (evaporated, condensed and powdered)	2,085,114,103

Animal Fats

An Address Delivered Before the Institute of Independent Margarin Manufacturers, by Myrick D. Harding, of Armour & Co.

FORTY-THREE years ago the first factory for the manufacture of animal fats on commercial scale for edible purposes was established in Chicago, near the present Union Stock Yards. These fats were gathered from the various small packing houses then in operation, and were rendered in a small steam jacketed kettle, the operator mixing same with a wooden paddle the while, to insure thorough melting and prevent overheating.

The growth of the Oleo business has followed proportionately the growth of the Oleomargarine business, as that is the chief use to which Oleo oil is put. As the various pieces of legislation were enacted, allowing Oleomargarine to be manufactured on an increasingly larger scale each year, the growth of Oleo oil manufacture has been enlarged and improved upon from time to time, and has kept pace with the constantly increasing demand for this highly important food product.

The early methods were necessarily crude. From the little cast iron, hand stirred kettle, from the seeding of Oleo stock in 50 lb. capacity iron pans, from the old style lever press, where weights were used to separate the Oleo oil from the Stearin, has evolved the present specialized oil manufactory.

In 1881 the manufacturers used open head second hand tierces or barrels for the seeding of Oleo stock, about 50 to 60 hours being required to properly seed in a receptacle of this kind. The tierces were difficult to dig and to move around in various parts of the plant, and therefore the cost of labor was excessive and the amount that could be handled was limited. By 1885 most of the packers adopted small wooden trucks for this purpose. These were lined with galvanized iron, and held about 500 lbs. each. This was found to be more successful, due to the ease of transferring them about the seeding room. About 1890 it was found that larger trucks could be used to good advantage, and a great many adopted a maple or poplar truck, capable of holding about 1000 lbs. These wooden trucks were found to be more sanitary and less liable to cause sour bottoms, or decomposition in the bottom of the truck. This style of truck is used very largely at the present time, and is found to give fair satisfaction.

The method employed is to hold the stock in a room at a temperature of 90 degrees, for from 72 to 96 hours, after which the stock is considered ready for the press. Before pressing, it is mixed by means of paddles, or with a mechanical stock breaker, so that uniform pressure will be applied to all parts of the mass, resulting in a maximum yield of oil. The knuckle joint press now in use, has superseded the old lever press and now 200 tons of pressure are applied to a surface of 27 x 39 inches in order to expel as much as possible of the Oleo oil from the Stearin, the latter having a high melting point, and not being suitable, therefore, for Oleomargarine manufacture.

The foregoing are merely examples of improvements that have been made in the process up to 1915. Let us go together now through a modern Oleomargarine factory, such as Armour & Company operate in Chicago, St. Paul and their other large plants. The first important consideration is the proper selection of the fat. The process is started on the killing floor, where the classification of the various beef fats takes place. The alimentary canal is tightly tied at each end before the viscera is dropped on a sterilized galvanized iron table. The fats come only from animals U. S. Inspected and Passed. The caul fat which surrounds the paunch or stomachs, the ruffle fat which is attached to the large intestine, and other fat such as tripe, rennet, peck, heart and gullet are all carefully saved for making No. 1 Oleo oil. Machine fat, kidney knobs, and suet from the beef cutting floor, are used in the manufacture of No. 2 Oleo oil, as there is slightly more flavor to these fats. Yellow fats which usually come from grass cattle are kept separate, in order that an Oleo oil of high color may be made, for use in the tinted grades of Oleomargarine.

The fats that are rendered into the manufacture of Oleo oil, are all rendered in a wholesome, sanitary manner, even superior to the manner in which the up-to-date creameries handle the milk product. At no time in the entire operation of slaughtering the carcass, are any of the primal parts, or edible parts, parts containing fat, permitted to come in contact with wooden tables, wooden floors, or benches. Scientifically constructed chutes, that are constantly sprayed with running water, convey the fats to galvanized iron tables. The intestines and the parts of the carcass from which the fat is taken, are handled from the moment they leave the carcass, until the fat is removed, and even afterward, in a thoroughly sanitary manner. It might be well for me to mention here, that in every slaughter house in the country, numerous Government Inspectors are in constant attendance and the moment a piece of fat becomes contaminated by coming in contact with dirt of any description, it is immediately taken out, as unfit for food product, and is put into the waste tanks.

The amount of fat produced per carcass depends entirely on the question of breed and feeding, as you will notice from the chart below:

Weight of Fat

	Per head
Heavy cattle	70 lbs.
Western cattle	40 lbs.
Light cattle	36 lbs.
Cows	36 lbs.
Texas cattle	25 lbs.

Division of Fats

	Native lbs.	Cows lbs.	Texas lbs.
Caul fat	15	7	6
Ruffle fat	17	8	4
Paunch fat	7	3	3
Rennet	10	5	3
Intestinal fat	15	6	6
Pluck and wind pipe fats	4	3	2
Miscellaneous fats	4	3	2
	72	35	26

You will notice that the good cattle have more fat in every organ of the stomach, than do the light cows and that the light cows have more fat than Texas steers.

The Oleo stock, or melted beef fat is now the important product which the manufacturer must deal with. His problem is two fold. First, to thoroughly clarify or cleanse the Oleo stock, so that every bit of moisture and impurities such as very fine meat particles will be thoroughly removed. Second to properly separate the oils of a high melting point from those of a low melting point, so that the Oleomargarine manufacturer will receive a product

easily worked and which is readily digestible.

In rendering the fats into Oleo stock, we obtain a yield of 75% from the fat from heavy carcasses and 60% from the fat from the light carcasses. After we properly drain and press this stock, we make a separation and get stock from the fat, of about 70% Oleo oil and 30% Stearin. Stock produced from lighter weight cattle we make a separation and get 60% Oleo oil and 40% Stearin. It is the Oleo oil made from this separation that is used extensively in the manufacture of animal Margarine.

After properly grading and classifying these various fats, they are sliced by a mechanical fat slicer, fitted with fast revolving rotary knives, and are chilled in filtered ice water from six to twelve hours, this chilling removing the animal heat, making a neutral tasting oil, and at the same time firms the fibre so that when the chilled fat is conveyed to the hashing machine it will be thoroughly macerated and will separate readily from the fibre upon melting. The hasher is nothing more than a large power machine, built exactly in the same order as a kitchen food chopper. The hashed fat is then mechanically conveyed to 3000 lb. capacity cast iron jacketed kettles, where the fat is gradually heated and stirred steadily by mechanical agitation, until the oil and fibre are thoroughly separated. The latter is then allowed to settle, this process being aided by the addition of salt, which makes a brine of the water in the mixture, increases the difference in the specific gravity of the oil and fibre, which is in the brine, and hurries the process. After settling for twenty minutes, the oil which is now termed Oleo stock, and which is nothing more than beef fat rendered at a low temperature, is syphoned off for clarification, after which operation the fibre is dropped to still other tanks, and re-heated for the recovery of No. 3 Oleo oil, and then pumped to the rendering plant for further manufacture.

Referring back to the first problem, namely that of cleansing or clarifying, the usual method employed for many years has been to let the Oleo stock settle a minimum time of four hours, syphon off only the upper portion, and re-work the bottom strata. Recent experiments at the Chicago Plant of Armour & Company, conducted under the direction of the writer, have shown considerable advantage over the clarifying tank process. We have found that by using a centrifugal clarifier, where many, many times the force of gravity is exerted on the Oleo stock, that a 50% reduction of impurities over the settling tank method are ordinarily possible. The other advantages are that the impurities are absorbed, and the oil resulting from stock clarified by such a process, has better keeping qualities and possesses that sweet, rich, nutty flavor, which all of you gentlemen who are experts in the business demand. Furthermore, the seeding or crystalizing process may be commenced at once, thereby saving time and space in the manufacture.

The second problem, namely the crystallization and separation of the high and low melting fat, has been changed completely at the Armour Chicago Plant. Chemically speaking the three oils which go to make up Oleo stock are Olein, Palmitin and Stearin. As brought out previously, the usual method is to draw this stock off into 1000 lb. capacity trucks from the clarifying tanks, and to let it stand in a steam heated room, from 72 to 96 hours. Expert Oleo oil manufacturers have always been very careful regarding the temperature of their seeding rooms. Should the room be too warm, the Stearin will not crystallize properly, and the oil may be of too high melting point, or else greater time will be consumed in seeding. Should the room be too cold, hard crusts will form on the surface of the truck, the Oleo stock will become too hard, and proper yields will not be obtained.

There has been more development in the manufacture of Oleo oil along scientific lines in the last five years, than at any similar period in the history of the Oleomargarine business. The most marvelous improvement is the mechanical method of graining Oleo stock, so as to separate the oil and Stearin by mechanical means over night, or in less than 12 hours. This new process was invented by Mr. Guy L. Noble, a young engineer with Armour & Co., who started in our Oleo factory as a student several years ago, and applied scientific principles to the question of Oleo oil. This invention, which is in practical use in our Plant today, combines the Oleo Seeder, the Oleo stock breaker, gives absolute control of the temperature, reduces the amount of space required for the seeding, and makes an improved product. It is just a question of time before every manufacturer of Oleo oil will adopt the new method in the place of the old-fashioned seeding method now universally used.

After seeding or crystalizing, pressing is the next step and the knuckle joint press which is the usual Oleo press used, requires considerable labor to manipulate. With the idea in mind of eliminating this excessive labor, Armour & Co. have done considerable experimenting with the so-called Berrigan or Worthington type of press, which when perfected will allow the seeded stock to gravitate directly from the seeding machine to the press. In fact, the idea is to carry out the gravity plan throughout the entire process. Pressing is accomplished by means of a slow settling motion, so that the oil is trickled out through the press cloths, and the Stearin will not be forced through, raising the melting point of the Oleo oil. While there is of course some Stearin in the Oleo oil, and some Oleo oil in the Stearin, and while the Palmitin divides itself about equally between the two. our absolute control of the seeding temperature permits us to makes as thorough a separation as possible, the result being commercial Oleo oil, for Oleomargarine manufacture, and Prime Oleo Stearin, which is used largely in the manufacture of lard compounds. This Stearin is generally packed in 500 lb. slack tierces, and should be stored in a dry place, dryness being more important than temperature, although it is well not to store at a temperature lower than 50 degrees, as it may sweat and become rancid when exposed to warmer air in transit. The Oleo oil, and we have now practically finished with the manufacture of this product, gravitates to large tanks, which will hold a carload, thereby giving us a very uniform oil. After being heated to the proper temperature in this tank, it is tierced and sent to storage, the proper temperature being 58 or 60 degrees F. After about three days, the Oleo oil crystalizes at this temperature, and if it has been properly handled throughout, presents a very nice, free, live, appearance and if anything a nutty flavor.

Oleomargarine manufacturers have long held the tradition that a well grained Oleo oil meant oil from high quality fats. This is not the case. High quality fats if improperly handled during the process of manufacture, may turn out pasty and apparently undesirable for Oleomargarine manufacture. The most important test for the Oleomargarine manufacturer to apply to Oleo oil is that of flavor or quality, and second the melting point should be considered. This should not of course

(Continued on page 35)

Dehydrating Foods

MRS. A. LOUISE ANDREA, a well known lecturer and writer on foods and cookery is the author of a book on dehydration which is just out, published by the Cornhill Company of Boston. The subject is treated comprehensively, practical directions for successful dehydration both in homes and commercial establishments being given. There are also abundant recipes for the cooking and serving of dehydrated foods of all kinds. Mrs. Andrea is an enthusiast on the subject of dehydration, believing that it goes far in solving the problem of the high cost of foods as well as affording a superior method of preserving surplus food.

On the general subject of dehydration she says: "The dehydration of foods is one of the most important considerations in the world. It is the means of preserving foods quickly, cheaply and perfectly, and it will save thousands of tons of garden, orchard and farm produce which have gone to waste hitherto.

"By dehydration, all kinds of foods—fish, meats, fruits and vegetables, and even milk and eggs—may be reduced to a fraction of their original weight and bulk. Moreover, when properly dehydrated, the foods maintain not only their nutritive properties, but their flavorings and colorings as well, being far superior to canned products in this regard.

"Those of us who have worked practically at dehydration and with dehydrated products realize that this art or science is bound to effect a revolution in our means and methods of food preservation, and interest in dehydration and appreciation of its possibilities are spreading rapidly throughout the world.

"During my lectures upon foods and cookery during the past two years most of the questions coming from the audiences were about dehydration, or 'drying' as the majority consider it, while I have people calling at my testing kitchen almost daily regarding systems and methods, among them being visitors from Cuba, South American countries, Italy, France, Great Britain and Canada, in addition to those from all over the United States.

"There is a very essential difference between drying and dehydration, and this fact must be recognized. As we know, all food materials are composed of myriads of tiny cells, these cells holding flavorings, colorings and nutrients, together with a large percentage of fluid—practically water. The problem has been how to extract the water from the cells without causing chemical changes and loss of essential principles.

"Broadly speaking, dehydration is a method of extracting the water quickly without rupturing the membranes or cell walls. Thus only the water is taken away and the volatiles, the flavoring essences, the colorings and the nutritive properties are left in the cells. It is just the principle of osmosis (a sweating, as it may be termed), and when the dehydrated or dehumified products are soaked in water for a time their cells absorb moisture, and furnish, to all intents and purposes, fresh food materials which may be cooked and dealt with just as could be the original raw foods.

"Drying, on the other hand, is a slow process,—so slow that the cell walls crack and open, allowing the volatiles and aromatics to escape and the coloring principles to change; hence the flavor and appearance of dried products are not and cannot be equal to those of dehydrated products.

"As tangible evidence of this we will consider grass and hay. Hay is dried grass, and even though you soak hay in water you cannot 'restore' it, whereas dehydrated grass 'comes back' fresh, green and succulent.

"Let us take dried apples as another example. Dried apple pie is always dried apple pie, as every one can tell upon tasting it, whereas pie made from dehydrated apples yields a dish that is really fresh apple pie, and it cannot be distinguished from pie made with fresh-cut fruit.

"To emphasize still further the conspicuous merits of dehydrated fruits and vegetables, I have often served dehydrated products and strictly fresh ones at the same meal, and no one could tell which was which. Recently a food commissioner from a neighboring country wrote to ask me what I thought of dehydration, and what plant or system of dehydration could I recommend. I replied that the subject was too important to deal with satisfactorily by correspondence, but that if he would call at my testing kitchen in New York he could see my exhibit of dehydrated products, —fish, oysters, meats and almost every fruit and vegetable grown in the United States, and that we could then discuss the technical details of dehydration to good advantage.

"This man came and brought another food official with him, whereupon I prepared a luncheon at which were served fresh-picked carrots, spinach, turnips and cabbage, the latter chopped finely and served raw with a dressing, as cabbage salad. At the meal I served the same things dehydrated, the carrots and spinach having been dehydrated a couple of years previously. My guests confessed that they could not tell which were the fresh vegetables and which were the dehydrated ones."

In speaking of dehydrated products from foreign countries, Mrs. Andrea has the following to say: "I have tested samples of dehydrated fruits and vegetables from Denmark, Germany, Russia and other European countries, but find that over there they precook everything before dehydrating it. This means a great loss in flavor and appearance, and when the precooking has involved a boiling process a large percentage of the valuable nutrients and solubles escape into the water, with consequent and material loss of desirable properties.

"We have improved vastly over the European methods, for we dehydrate most of our produce raw, with few exceptions, such as potato, beets and corn, the latter being steamed long enough to set the milk.

"Just a word of caution will be apropos here. There is dehydration and what many people mistake for dehydration, the latter being improperly and imperfectly done. The produce must be dried 'below the enzyme' and throughout: uniformly from centre to surface. That is to say, there must not be enough moisture left to permit of fermentation or mold, but at the same time there must be a sufficient percentage of moisture left in the products so that they will 'restore' as they should.

"Already, many people have met with disastrous losses through trying to put dehydrated products on the market in packages, without realizing the importance of the foregoing. The products molded and spoiled, and in many cases developed grub worms and insects, all of which meant loss and disappointment to the packers, and distrust of dehydrated products on the part of the public.

"This need not be a source of discouragement, however, for proper dehydration and treatment of the products overcome these troubles, and we must remember that when canned foods were first put on the market, constant spoilage and loss occurred until the packers learned the means and methods now employed by them."

In discussing the uses to which dehydrated foods may be put, the author says that almost everything that can be eaten can be dehydrated and successfully used. "As a matter of fact," she says, "I have succeeded with everything except watermelon, in which the percentage of moisture is so excessive and the cellular structure so delicate that I must exclude watermelon from the practicabilities, albeit the rind may be dehydrated for future use in pickles and conserves. While it would seem that the tomato comes in the 'impossible' category, nevertheless the tomato can be dehydrated to good advantage, in quarters if the tomatoes are small, or sliced, and then ground into powder, if desired, the latter being the better for soups and sauces.

"Whether for commercial purposes or for home use, it must be realized that through dehydration the finest and freshest of farm and garden produce is always available for the bleak winter months, and for use where such produce cannot be grown. One can have young, tender beans, fresh peas, sweet corn, succulent, tender spinach, tropical dainties and a multitude of other foods at any time during the winter, and at any place whatever, all preserved at their freshest and best, and when cheap and plentiful. In fact, in many districts produce develops so rapidly and in such abundance during the summer that it can be often had for the mere picking, and those having farms and gardens may dehydrate in their kitchens such small amounts of fruits and vegetables as it would not pay to put up by the canning process, but which may be saved to perfection and without cost by simply using a little home dehydrator over a kitchen range.

"Those intending to dehydrate on a commercial scale are naturally interested in the possible sources of their raw materials and markets for the finished goods. Worth while quantities may be easily sold to hotels, restaurants, clubs, camps, boarding schools, hospitals and other institutions, however, and to the supply departments of railroads, steamships and sailing vessels. The advantage of such products are so many and so obvious that but little salesmanship is necessary, for it is a matter of obtaining fresh produce which is already cleaned and ready for use, which takes up little storage space, and at a positive saving of time and labor to the purchasers.

"The tremendous reduction in space and weight is all-important as far as dining cars and ships are concerned. Many of the latter heretofore have been going without fresh fruits and vegetables on account of lack of room and refrigeration, to the detriment of both passengers and crews. But where a truck load of good, fresh produce has been reduced to a mere case or barrel, all the previous objections are done away with, and dehydrated fruits and vegetables will be carried and served, thus preventing scurvy and other ailments, and adding materially to the health, efficiency and happiness of all concerned.

"Other profitable channels are opening up, such as the furnishing of basic materials for jams, jellies, syrups and extracts, for the fruits employed therein may be dehydrated and set aside to be used when convenient, and the resultant products are in no wise inferior to those made from the fresh fruits.

"There is no need of worry as to the outcome of a dehydration business, properly conducted. In the first place, it is dealing with a necessary factor in life, namely, food. No matter what happens, whether wars, revolution or business depressions, every one must eat. Jewelry, books and even clothing may be unsalable at times, but where food of the finest and best quality can be supplied in convenient form, and at such a saving of labor, spoilage, space, bulk and weight, there will always be purchasers aplenty, and as dehydrated products become more appreciated, as they are bound to be, the number of purchasers will constantly increase.

"People are astonished at seeing for the first time how wonderfully fruits and vegetables 'come back.' Indeed it is a modern food miracle, hence this comparison should be in evidence as a selling factor.

"To further exemplify how dried foods save space and materials here are the results of some tests made in the Tribune Laboratory:

"There are different qualities of dehydration,—poor, better and best. The first test of a dehydrated product is its keeping quality, and then, all-important to the consumer, how it restores and tastes when served. Poor dehydrated products will not keep long; furthermore they take too much time to restore (even when they will restore at all) and are then insipid and inferior in flavor. In fact, I have countless specimens of so-called dehydrated stuff which has been both brought and sent to me to find out why it would not come back, or why it quickly molded. If overdried, or dried too slowly the cell walls have been ruptured, chemical changes have taken place, and in many instances an actual cooking has resulted, usually because too high a temperature has been employed or too much time has been consumed in the process. As far as the molding, this is generally caused by the inner cells retaining too much moisture, and here is one of the points regarding which many dehydrators go wrong, as I will explain presently.

"I obtain the best results by starting the dehydration at a relatively low temperature, and I insure a perfect product by having a certain amount of moisture in the dehydrator at first. Relatively good products may be obtained without the employment of such measure, or through a one-temperature drying, but some initial moisture and raising of temperature will be necessary to obtain perfect results, and here is the reason. If raw materials are subjected immediately to a high, dry

	Raw	Canned	Dehydrated
Peaches	2 pounds 8 ounces	1 quart or 2 pounds, 4 ounces	½ pint or 6 ounces
Peas	1 pound, 4 ounces	1 pint or 1 pound	½ pint or 4 ounces
Carrots	2 pounds	1 quart or 1 pound, 14 ounces	1 pint or 4 ounces
Tomatoes	2 pounds 6 ounces	2 pints or 2 pounds, 4 ounces	¼ pint or 2½ ounces
Corn	1 pound, 6 ounces	1 pint or 1 pound, 5 ounces	½ pint or 4 ounces
Apples (1 quart)..	2 pounds, 4 ounces	1 quart or 1 pound, 12 ounces	½ pint or 3½ ounces

temperature there is a very rapid evaporation from the surface or superficial cells, which 'skin dries' the material, forming practically a glaze or coating which prevents the inner cells from liberating their moisture as they should do. Consequently when the product is apparently dehydrated, the inner cells still contain too much moisture, and are still subject to enzymic action, besides which this moisture exuding later on will furnish a dampness sufficient to allow of the superficial molding which has given so many people such trouble and loss. At one time hot dry air was considered so necessary that attempts were made to eliminate moisture from the air by passing it through or over some hygroscopic substance such as calcium chloride or sulphuric acid, or by heat-drying the air before it was admitted to the drying chamber, but such methods proved fallacious besides adding to operating costs.

"Dehydration is such a new subject that it is difficult to find a standard or basis of agreement upon all points among those who are experimenting with it. But with all due deference to contrary opinions, and after having carefully tested many systems and worked with the subject for some years, I am able to secure the best results by observing the following rules: to use radiate heat rather than direct heat; to start with the lowest temperature necessary and finish with the highest temperature suitable. And, by the way, times and temperatures vary for different products. But whatever the necessary time or temperature, I can only get results satisfactory to myself by starting at the minimum temperature and finishing at the maximum temperature for each particular product, having moisture in the dehydrator for a certain length of time, which insures all the cells (both inner and outer) being uniformly dehydrated, finishing up with the highest heat called for, and dry heat at this latter period.

"My conclusions have been formed, as I say, through years of tests and at times great discouragements, to say nothing of mistakes and the following of theories which seemed plausible, but which experience and better knowledge of the subject made me discard. I still have people calling upon me who maintain that immediate, dry, direct heat and just one temperature are all-sufficient. The samples of their products force me to disagree with them, and in several instances I have noticed that the previous ideas of using dry heat and a one-temperature process have been abandoned and other dehydration methods have been sought after, for it was ascertained, in the proverbially dear school of experience, that rapid 'skin drying' means molding later on and imperfect restoration.

"Speaking of heat, radiate heat does give better results than direct heat from a furnace. The drying is more uniform and evaporation is more gentle and regular, all of which has an important bearing upon the finished goods.

"Heat circulation and elimination of moisture are such essential factors in dehydration that these three coactive points should be carefully considered before purchasing any plant or adopting any system."

Under the chapter on packing and preservation Mrs. Andrea takes up the question of sulphuring. "Sulphuring is a much disputed point,' she says. "Some people advocate it, while others are violently opposed to it. Those who favor it claim that it is not injurious to health, while their opponents assert that it is.

"Be that as it may, how long does sulphuring protect fruits and vegetables against insect attack? We have all seen sun-dried apricots, etc., horribly infested, although these products have admittedly been sulphured.

"At present, therefore, sulphurization would seem to be a matter of personal predilection.

"Generally speaking, apples, apricots, pears and peaches are sulphured before drying in order to prevent discoloration, and in many cases, after sun drying, to destroy the grub worms with which they have become infested during the process.

"I am not advocating the use of sulphur, and when we read that during the war the government specifications called for non-sulphured potatoes, it is readily seen that sulphuring is not looked upon with favor generally. There are those, however, who wish to employ sulphur, especially with potatoes, so for that reason I will say that one producer whom I know very well says that he uses 250 pounds of sulphur to 100,000 pounds of sliced or cubed potatoes, these being all ready for the dehydrator. Moreover, he employs just a suggestion of sulphur fume in the dehydrator during the entire process, although the main sulphuring is done before the potato goes into the dehydrating chamber, and he states that sulphurization effectually prevents enzymic action, so that while the blanched product will ferment in humid climates the sulphured potato will not.

"In using sulphur judgment must be exercised and allowances made for whether the product is new or old, and how thickly the trays are loaded.

"In dealing with sulphured potatoes ultimately, it is very important that they should be cooked in steam instead of boiling water, as when cooked in boiling water they become slimy and have a disagreeable effect, which can be removed, however, by putting the pieces in a sieve or colander, after cooking, and letting hot water run through them.

"Dipping fruits to prevent discoloration has been tried extensively, chlorate of potash, permanganate of potash, sulphate of magnesia, chloride of lime, peroxide of hydrogen, etc., being used in different strengths, but none of these has proved satisfactory."

"Dehydrated products do not restore satisfactorily until they have been out of the dehydrator for twenty-four hours. This is probably because the cells are tired and need a little rest and recuperation, for even 'inanimate' matter becomes exhausted."

The book contains a discussion of the different methods of dehydration as involved by the machines on the market, both for commercial and domestic purposes. The results of the author's own experiences are given.

There is no question that this volume is a valuable contribution to the science of dehydration in which there is an ever growing interest.

More Interest in Hot Lunches

Teachers and parents are commencing to realize the importance of hot school lunches, and the home-demonstration agents sent out by the United States Department of Agriculture and the State colleges are helping to establish hot lunches in communities which are awake to their value. Last year these extension workers, who are trained in home economics, helped establish hot lunches in 2,929 schools. The work will be continued this year on an even larger scale. In some counties a wall of prejudice against the innovation has to be broken down before it can be started. Where this is true, the success of the hot lunch in one school, where it has been established, is usually followed by a demand for something similar in all the adjacent schools.

A Tree of Ripe Apples

By VERNIE E. CONNELLY

"THERE'S that Evanston Community Kitchen again!" you are probably saying if you have taken a look at the illustrations before you began reading the story. Yes, here it is. You've been hearing about it for more than a year now, haven't you? You also think it is a very nice sort of civic movement, or a harmless enough way for a group of wealthy club women to pass their time, but..... The average person has entertained this idea without appreciating the economic importance of the movement and the far reaching results that may ensue from the success these women have made of the undertaking.

And that is exactly why we have chosen to tell you a story about the Evanston Community Kitchen! We want to help you.

If I should make the statement that this community kitchen has been working for you the past year you would have strong doubts of the writer's sanity, wouldn't you?

There is no question that the warm sun and wind, good soil and rain, working quietly through the summer season, turn the tiny green apples on the tree into big luscious ripe ones, ready to be harvested in the fall, is there?

And that is just what these Evanston club women have done and are still doing. They planted the tree in fertile soil and carefully nursed it to maturity. The apples are now ripe and they are golden apples, too. The harvest is waiting. Do not let the frost of your skepticism blight this bountiful harvest.

To ponder these terse facts may give clarity of vision to the story that follows:

1. The Evanston Community Kitchen is a business enterprise.
2. It is a profitable business enterprise.
3. It is doing a gross yearly business of approximately $100,000.

It is true that the kitchen had its inception as a civic emergency measure. When the epidemic of influenza raged so fiercely a year ago last winter, the Evanston Woman's Club learned that many families in the community were suffering for well cooked food. Not because of poverty, but for lack of cooks, in many instances entire families, including help, being prostrated. An emergency kitchen was opened without delay in the basement of the club house and operated for two weeks, an average of 200 meals a day being served. These meals were furnished to healthy members of the family as well as those who were ill or convalescent. The previous summer, as a war conservation measure the club had run a community canning kitchen in a most successful and profitable manner.

The comparative ease with which both undertakings had been accomplished inspired the idea of a real community kitchen. Mrs. James A. Odell, Mrs. Homer H. Kingsley and Mrs. Rufus C. Dawes, who had a most intimate knowledge of the shortage of domestic help in Evanston, because they in common with other women in the community were having much difficulty in either obtaining or keeping proper help, saw in the community kitchen idea the means of mitigating this shortage and bringing joy and serenity to many help harassed households. Naturally, this was the strongest argument for a central kitchen.

From the first the enterprise was an independent one, though with the approval and encouragement of the Evanston Woman's

Photo by courtesy of Fort Dearborn Magazine.

The Evanston Community Kitchen

Evanston Woman's Club, where the kitchen was started

Club. With creditable wisdom, the committee realized from the start that if the movement had the faintest smack of anything about it besides pure business, it would defeat itself in the beginning. Well-to-do Evanston women did not want to be patronized, helped out of their domestic difficulties by kind-hearted fellow-clubwomen; they had the means to pay for good food and service and were not only willing but anxious to do so. With this grasp of the situation the Community Kitchen Committee rented the basement of the Evanston Woman's Club and announced their intention of operating a delivered dinner service.

But in order to have this service satisfactory the right sort of container was essential. A contest was held with an electrician from the Commonwealth Edison Company in charge, but for various reasons all containers exhibited were rejected. The women explained that what they were looking for was a glass-lined metal dish with high thermal efficiency. Finally, a man who had discovered a process of welding metal and glass together produced a dish that embodied many of the features the women demanded but which lacked some essentials, chief of which were symmetry of outline and beauty of proportion. They wanted dishes that would not only keep food hot for a number of hours, but which were also handsome enough to put directly on a well appointed dinner table, saving the bother of emptying the food into other dishes for serving.

After working with a mechanical draftsman for some weeks, the committee at last succeeded in bringing to perfection the present beautiful thermal ware dish which has been in use for the past year. The newest model of the complete container has a light metal base. On this base are stacked the dishes after filling, four to each container. Over all is fiitted the metal hood, which is insulated, and clamped securely to the base. The dinner, or at least the hot portion of it, is then ready to be delivered.

For salad, cake and cold desserts, a workingman's dinner pail is used, the sort with three compartments. For instance, if the salad is hearts of lettuce, individual nests of leaves are arranged in one compartment, ready to be transferred to salad plates.

Thousand Island salad dressing is put in a squat jelly glass which will fit nicely in the tray. Molded desserts, cake wrapped in oil paper, berries and pies are carried in this dinner pail. Pies are never sent cut. If the family is a small one, individual pies are used, but if more than four, a whole pie is sent.

If ice cream is sent for dessert the thermal ware jar is used, as it keeps ice cream in perfect condition for several hours without ice. In fact, so efficient are these containers that if properly refrigerated before ice cream is packed in them, they will keep the cream from 18 to 24 hours. A graphic illustration is that of a man who, while in New York, thoughtfully remembered that there was a certain brand of ice cream there of which his mother was particularly fond. He bought one of the jars, known as the Aladdin Thermalware Jar, had it refrigerated, packed with ice cream and carried it as hand luggage in a Pullman car to Chicago. The cream was as good when eaten in Chicago as when it was packed in New York.

The dishes, container jacket and the thermal jar are all insulated with magnesium carbonate. The glass lined dishes are mirrored to reflect the heat rays and thus produce a higher degree of heat efficiency. The glass is

The Thermal Jar, made especially for the Evanston Community Kitchen

heavy and does not break from any outside blow or from dropping. The insulation acts as a protection and the dishes are thus very durable as well as beautiful. The outside of the dishes is a highly polished nickel-silver. Though not cooking or baking dishes, they are made to withstand a high temperature without breaking.

Mrs. Odell emphasizes the fact that without the aid of these dishes and containers the kitchen could not have succeeded.

Dinners are delivered by motor truck. The town is zoned and it is the business of the packer to see that all containers for respective zones are together, thus saving the driver's time and facilitating delivery. Dinners are ready to be loaded by 4:30 and in some instances where they are not eaten until as late as 8 o'clock, they are still piping hot. As the dishes are glass lined the food can stand for hours if need be without its flavor being affected.

The dinner delivery was first started with ten customers who were asked to buy their own containers. In quantities, these containers retail for $40 and the financial outlay required made it necessary for the kitchen to ask this of its patrons, but now it has progressed to such a state of financial independence that it is indifferent as to who owns the container. If the kitchen owns it, an additional charge of 10 cents per dinner is made and a container pays for itself in about three months. However, the majority of regular customers own their own containers.

The price of a dinner is now $1.00 to regular customers and $1.10 to casual patrons or those who do not own their own containers. Regular subscribers to the service agree to take dinners at least five days a week. They may cancel the other two days providing they do so by noon. On the other hand, they may add any number of guests they desire merely by telephoning for the required number of extra dinners. Mrs. Odell, who is the acting manager, says it frequently happens that a business man in Chicago's loop will call up and say that he is bringing two or three or four guests home to dinner, as the case may be, and to kindly send the extra number of dinners, also please telephone his wife of the additional number of guests.

But suppose his wife is out at the bridge club or afternoon tea, cannot be reached by telephone and doesn't get home until the same hour as her husband? She is refreshed from her afternoon out, dressed to receive guests, and the requisite number of dinners, as hot as if they came right out of her own oven, stand at the kitchen door. All she has to do is lay the extra places, put the dinner on the table and watch the hungry men enjoy the delicious food which she DID NOT COOK.

The menus are varied enough to suit the most exacting, though only one menu is prepared each day. Families accept what the kitchen selects just as they would do if mother ordered the meal. The only attempt at catering to individual appetites is where there is a family objection to some particular meat, such as veal, fish, etc. A list of family aversions is kept and a different meat substituted in such cases, but the number is surprisingly small, families enjoying the surprises waiting for them each night. It is well to note that this surprise, contrary to custom, includes the housewife as well as the rest of the family.

Soup is sent about two or three times a week in the summer and salad the remaining days, this program being reversed in the winter and soup sent the oftener. Meat is sent already sliced, ready for serving. A professional carver who works in a cafeteria and is not busy in the afternoon between 3 and 4:30, comes to the kitchen bringing the proper knives and carves the meat for the evening dinners which are ready to be packed. This carver pays for her own services over and over again by the amount she saves through her skill. Gravy is never poured over the meat, but sent in a separate dish. No sloppy looking servings are ever sent out. Dainty serving is a law that is well lived up to. The dinner includes a vegetable, potatoes, salad or soup and dessert. The patron furnishes his own bread and butter and drink. Sometimes as a surprise, muffins or hot biscuits are sent, but not more than two or three times a month. The greatest number of dinners sent out in any one day were 160—

Container with glass-lined dishes

they average about 700 a week. Sunday dinner is $1.25 and $1.35.

The kitchen has been moved from the Evanston Woman's Club to a private home which the three women partners, Mrs. Odell, Mrs. Dawes and Mrs. Kingsley, had redecorated, remodeled and made into a model sanitary, up-to-date kitchen. All labor-saving devices found in the best restaurants anywhere are to be found in this or, rather, these kitchens.

There are four connecting kitchens, which is according to the most approved scientific methods of keeping odors from mingling and producing one conglomerate odor that flattens the taste of everything cooked. First, there is the pastry kitchen. Adjoining that is the salad kitchen. Then comes the dishwashing kitchen with the big hotel sinks, the refrigerator and the enormous insulated muffling oven for heating the dishes before packing the food. This oven gives off no heat from the outside, and, as stated, is in the same room with the refrigerator.

The hot, cooked, delivered dinner service is only one of the three branches of this thriving business. They maintain a catering service which is in growing demand. A notable instance of just what may be accomplished along this line with the proper equipment, occurred a few weeks ago. At the alumni luncheon of Northwestern University, June 15th, the Evanston Community Kitchen served 1,000 persons with a delicious, hot luncheon which is said to be the only hot meal ever served in this building, the Patten gymnasium, an enormous building, built for any purpose other than easy catering.

Owing to the illness of both her partners the entire affair fell upon Mrs. Odell's shoulders at the last moment, but she most adequately met the emergency. The kitchen of the gymnasium is on the second floor in the extreme front, west end of the building; the luncheon was served on the first floor, east end of the building and the building is a mammoth structure. But here is where the thermal dishes proved their helpfulness again. The food was placed in the dishes, which after being removed from the container will keep foot hot about two hours, and thus when the 1,000 diners sat down at the tables, the hot courses were already before them. At convenient posts in the dining room the Aladdin Thermalware Jars stood about filled with hot coffee, and the waitresses could speedily fill coffee cups and serve the coffee hot. The entire luncheon was served in a little more than an hour.

The menu comprised veal loaf, baked ham, macaroni and cheese, rolls, salad, ice cream and cake. The ice cream was served from the thermal jars as was the coffee. Everyone was served abundantly —quality and quantity, not variety, was the aim of Mrs. Odell and she achieved it.

The success of the catering was astonishing — everything that should have been cold was cold and everything that ought to be hot was hot. The caterer who handled the affair last year said it couldn't be done under such hampering conditions as exist in the gymnasium. But the dishes and thermal jars turned the trick.

Sandwiches, cold and hot foods of all kinds, coffee, tea, ice cream and salads of all kinds; in short, every reasonable demand made by picnic parties and motorists is met. Often, in the warm weather, families have their dinners delivered at the lake front instead of at home. Beach parties among the younger element make frequent requests for suppers on the sand.

One of the most profitable branches of the business is the shop that sells many varieties of cooked foods, which is a strictly cash-and-carry proposition and consequently very satisfactory. Potato salad is $1.25 a quart, cabbage salad 60 cents a quart, Italienne salad $1.00 per quart. Small loaves of nut bread which rival cake in richness sell for 40 cents a loaf, homemade white bread is 25 cents a loaf. Layer cakes, frosted squares and several varieties of cake sell for $1.40 each, though some of the fancier cakes are considerably more. Doughnuts are 50 cents a dozen. Small cakes run from 60 cents to 75 cents a dozen. On Saturday cakes sales run well over $200, 125 layer cakes alone being sold. It is safe to estimate that the other days approximate cake sales of $50.

Which is all very well, you say, but are they making any money? They are!

How many business men start without a penny of capital, make their business pay from the start, buy equipment and accumulate a bank account and a splendid paying business all in one year's time? That is precisely what these three women did. It was a matter of pride with them to do so and they succeeded.

For the first ten months they rented the Evanston Woman's Club kitchen, thus obviating the necessity of making an initial investment of capital for equipment, except for such small articles as pans, beaters, mixing bowls and miscellaneous utensils of such nature. These items were bought from a local dealer on 30 days' credit. At the end of 30 days they had enough profits from sales to pay for the small equipment, their month's rent, besides a balance for working capital for the ensuing month.

At the end of ten months they had enough money to move into larger quarters, pay $1,200 for remodeling the house into which they moved the kitchen and to buy $2,600 worth of new equipment. They already owned a large number of the complete containers which are worth $40 each. And still there was a bank balance!

Photo by courtesy of Fort Dearborn Magazine.

Loading dinners at the Evanston Community Kitchen

And all this time the most skilled cooks available were employed as well as high-class assistants all the way through. Almost constantly there are two or three college graduates at the kitchens, home economics women who are perfecting their knowledge in a practical way.

One of these young women is now the buyer. She was first employed as pastry cook and cake maker, but worked in each department until she learned every phase of the business. It was soon observed that she had splendid buying ability and was a discriminating judge of foods. All

Automobile parties, picnics and afternoon tea aided by the Thermal Jar

the best brands of prepared foods are bought. Vegetables and fruits are purchased direct from the farmer or from South Water Street. Meats are bought from a local butcher upon whom they can depend. He is called by telephone in the evening just before closing time and told what meat is going to be required by the kitchen the following day, though the exact amount is not known until the next morning. He makes an estimate based on the average demand and provides enough to meet the order the next day.

Though Mrs. Odell vows they are novices in cost accounting, yet their very lack of knowledge of this science has made them proceed cautiously and perhaps safeguard themselves more surely than does the person who thinks he knows all there is to know on the subject. For instance, in deciding at what price they could sell doughnuts and yet make a profit, they figured cost of materials, weighing the fat before and after frying; they estimated cost of the cook's time, length of time gas was used and then added something besides for what they classed as overhead. In their overhead they figured deterioration which in this line of business is such an important factor. Arriving at the actual expense of making the doughnuts they then added an extra per cent for profit. As materials advanced in price they advanced the price of the doughnuts. The same methods were followed with every article of food sold until a basis of profit was accurately computed. It is safe to say that today they could give lessons in cost accounting to some restaurant owners who have been in the business longer than they have.

Only recently they found that there was too much wastage from the ends of boiled tongues of which a great number are used in making sandwiches for picnic parties. By experimenting they found that the tongue ends when ground and mixed with mayonnaise made a delicious sandwich filling. This is regularly done now, the mixture placed in jelly glasses and sold at a good price in the shop of the kitchen. Some of the very finest small cakes they sell are made with crumbs from the layer cakes as a basis.

There is one big, predominating reason why this community kitchen has succeeded, aside from the great value of the splendid containers, and that is the quality of the food and cooking. The slogan of the kitchen is, "Our prices are not as high as our quality." And that statement is absolutely true. The food is perfect. The cakes are not made to look extra nice and taste just fairly so—they are so good the price matters not a jot. The same praise applies to every bit of food sold. It is genuine home-cooked food better than anything mother ever made and this is not disparaging mother either, for she often tried to save on ingredients and this community kitchen does not. The best of everything and plenty of it is used and the charge is made accordingly.

The shortage of domestic help is positively acute. Maids are now demanding and receiving $12, $15 and $18 a week. Counting a maid's room, board and what she breaks, destroys and wastes, she costs her mistress at least $100 per month. If the family is composed of four members and dinners were delivered by an enterprising restaurant, the monthly dinners would cost the family approximately $120 or $125. This is only $25 a month more than a maid costs and not only that anywhere from $60 to $75 a month has been saved on the grocery bill, as no food for dinners for five persons has been bought. This will leave the housewife a nice balance for a cleaning woman and laundress and she will have run her home with greater smoothness, elimination of worry, less cost, and if the restaurant does its part as well as the Evanston Community Kitchen has done, better dinners will have been served than when a maid was depended upon.

One Evanston woman says: "I find by careful accounts kept for the past year that the hot delivered dinner service is not extravagant. I have done without a maid and I have not felt so independent in a long time. We dine at whatever hour we wish; we have as many guests as we desire whenever we want them. My kitchen is no longer dominated by an alien. My own self-respect has been restored. I do not any longer have to undergo the annoyance of being interviewed by ignorant girls who come out to inspect my home and interrogate me in order to decide if they will accept me as their mistress along with the exorbitant price they exact for their indifferent services."

There is an actual demand among well-to-do people for just this sort of service. Naturally, it is not intended for the very wealthy people who are obliged to keep a number of servants, but for the homes where one or two maids have been employed, it is a positive boon.

Sunday dinners are a source of much annoyance to the average housewife and a delivered dinner would turn her Sundays into days of rest, in truth as well as name.

The idea of a central or community kitchen is the solving of a big question in economics. Women are beginning to see it and yield to its persuasive logic just as they did to that of the bakery, the laundry, the ready-made clothing, vacuum cleaner and all the other revolutions that have made their way into our modern scheme of living.

The Evanston Community Kitchen has done a vast amount

(Continued on page 38)

The Changes Taking Place During The Ripening of Bananas

By FRANCIS E. LLOYD MacDONALD

Professor of Botany, McGill University

THE process known as "ripening" in fruits is a complex of physiological phenomena, resulting, from the gustatory point of view, in a product of maximum palatability and digestibility. So complex indeed is the series of events that as yet only the more readily studied and the practically most important have received attention. As extensive as the gaps in our knowledge may be, however, enough is known about the banana to make it distinctly worth while to offer a brief summary of this knowledge as it stands at the present moment.

The changes in question may be grouped as follows: Those namely which take place in the appearance of the fruit, of prime importance in finding a market; those in texture, which are the paramount qualities concerned in handling, but which are at the same time scarcely of secondary importance in the eating; those in flavour, which must meet the supreme test of eating; and those of food value and digestibility, undeservedly less considered, but of real importance in the long run, since the fruit of highest food value, especially when coupled with tastiness, will hold the market when it fails for others of inferior values.

Colour Changes

The changes in the colour of the banana which ensue during the ripening process are taken as indices of the condition of the fruit. Assuming it to be in good condition when received by the wholesale merchant, it will have a bright green colour. The changes which ensue during the hanging period are similar in general to those which take place in foliage during the early autumn. In the tropics this discoloration takes place at various times, according to the species of tree. These changes are chemical in nature, and consist in the disintegration of the green pigment, known to science as chlorophyll, and its supplanting by a yellow pigment, the later destruction of which is followed by the browning process. None of these changes are of necessity dependent on each other, so far as we know. For example, the yellowing is held by some to depend merely upon the removal of the green, thus unmasking the former pigment, and this is undoubtedly in part true. In the banana, however, there appears to be a transition period between the loss of the green and the full epiphany of the yellow when the colour is quite pale, and neither one thing nor the other. It would thus seem that the yellow pigment in the banana is in large part a development rather than merely a passively produced effect.

The rate of colour change, like the other ripening processes, depends on the temperature. At 68 degress Fahr.[1] bananas of a bright green colour become slightly yellow in one to two days, and fully yellow in five to seven days, most frequently in six, maintaining this colour with little change for about seven days. The colour then changes to brown, and finally black.[2]

Mr. H. C. Gore[3] has properly adopted these periods as convenient ones for delimiting stages of ripening, which is of course a gradual process. Those conversant with the handling of the fruit in ripening chambers will recognize the general validity of regarding the fully yellowed banana as "ripe' and the brown condition as "fully ripe." In the following account these terms are used in this sense.

It may be of practical importance to know that the rate of colour (as of other) changes is also affected by previous exposure to low temperatures. I exposed a lot of green fruits to a temperature of 29 degrees for three hours. The internal temperature of the fruit fell to 33 degress and remained steadily at that point. Several fruits were then kept in a suitable vessel, together with samples which had not been chilled, at a room temperature of about 68 degrees. The green colour did not fully disappear from the chilled fruit in ten days, while the controls changed promptly in a few days. It would be interesting and probably practically worth while to experiment in this direction carefully, making use of various temperatures, and watching the subsequent effects upon the rate, not only of the colour changes but also of the more important physiological changes. This because the question of refrigeration is one which has been and is much to the fore, as a large part of the technic of transportation.

Mechanical Qualities

The texture of the ripe fruit depends on two chief factors: the amount of water present, and the extent to which the cellular elements are dissociated. The fruit when received by the wholesale merchant is normally quite full of water, and its tissues are of a maximum consistency and may be snapped in two. The brittleness depends in some measure on the continuity of the cellulose structure, but chiefly on the water content.

The amount of water in the pulp is indeed so great that the banana is literally too big for its skin. If a green fruit be split part way with a sharp knife, the edges of the wound will gape apart and it will require a considerable amount of pressure to bring the cut surfaces together. Or if a thin slice be cut, the pulp will become saucer-like. It is thus demonstrated that much pressure and tension is exerted by the pulp on the inner surface of the skin. During ripening there is a net loss of water, amounting, when the fruit is kept in a humidity chamber, to 3 to 4.5 per cent of the original weight in five to seven days, and to 8 to 10 per cent in thirteen days,[1] whereby the turgidity of the fruit is much reduced. This loss is probably less than occurs ordinarily in ripening rooms (where, however, the humidity is kept up by various means), and especially after the fruit has been placed on sale, which is after the fourth day of hanging. The more water loss, of course, the smaller the fruit, and, beyond a certain limit of size, the lower the price it will command, even though the food value and flavour remain unimpaired. The most interesting fea-

1. Except where otherwise indicated, air temperatures (Fahrenheit) are given in accordance with practice. It would conduce to a more exact understanding of the behaviuors of the fruit if the internal temperatures thereof were known.

2. According to Tallarico (Arch. Farm. sperim. 7:27-48, 1906), these later colour changes are quite complicated

3. Changes in Composition of Peel and Pulp of Ripening Bananas. Jour. Ag. Res., U. S. Dept. Agri. 3:187-203, 15 Dec., 1914. I have drawn on Mr. ore's results in this paper.

ture in this connection, as Gore has been able to show, is that, while the peel loses water, the pulp gains water, especially during the period of yellowing. The average of a number of analyses showed that the percentage of water in the pulp increased from 72.29 to 75.50, and further that the whole, or certainly nearly the whole, was drawn from the peel. It is unlikely that the greatly increased amount of sugar in the pulp, which will be mentioned below, attracts the water from the peel. Under the best conditions the pulp will be juicy as well as properly flavoured and nutritious, while if more or less dried out, the pulp becomes more or less pasty.

Aside from the changes in water content, other, properly called textural, changes occur. To understand these it is necessary to form a picture of the structure of the interior of the fruit. Imagine a vast number of irregularly oval, closed sacs of cellulose fastened together side by side and end to end, each sac containing as much as it will hold to distension of sap and starch grains. Such, as a matter of fact, is the structure, aside from details which need no mention here. In the green fruit, these sacs or "cells" are quite firmly held together by a sort of cement called pectose. During ripening, this cement is changed by a process chemically similar to that of changing the starch into sugar, to form pectin, which is soluble in water. The cells are thus freed from each other, rendering the pulp of the consistency of paste, and the peel readily removable. If the cells die and collapse, as they do in time, the pulp then becomes watery and discoloured, but from the point of view of nature, this is the natural and inevitable end of the process.

It is well known that the ripening of bananas will not proceed normally unless they are properly ventilated. It is therefore of interest in this connection to note that in the absence of oxygen, the fruit remains firm. That is to say, the process of changing pectose to pectin is arrested if oxygen is withdrawn. It was Pasteur, I believe, who in 1872, during his studies in fermentation, was the first to discover this fact. He wrote that plums exposed to air became "soft and watery and sweet while those enclosed in a jar remain very firm and hard, the flesh was by no means watery, but they had lost much sugar" and yielded 1 per cent of the total weight of alcohol.[1]

Geerligs[2] found the same to be true of bananas, by keeping them in nitrogen, itself inert, but thus excluding oxygen. In such the firmness of flesh was retained, and the starch remained unaltered, showing that the presence of oxygen is necessary not only for the change in texture, but also for other ripening processes. I found the same to be true of bananas kept in an atmosphere of carbon dioxide, which is normally generated during respiration by fruits as they ripen, while at the same time oxygen from the air is taken up. It is evident from the foregoing that proper ventilation is necessary to ripening. At the same time it must be noted that a reduction of oxygen or an increase in carbon dioxide to some controlled extent might be of use in holding back the changes involved if so desired.

Changes in Food Content

The food material present in the banana when in the unripe state consists chiefly of starch, occurring as insoluble granules in the cells. Inasmuch as, at the present, the peel is a waste, the figures for the pulp only are of immediate interest. According to the most recent results, in Gore's paper already cited, about 22 per cent of the unripe pulp is starch. When in this condition the fruit may be cooked, thus rendering the starch digestible, as in the case of other vegetables, such as the potato. The starch content, however, changes rapidly during the course of ripening. At the end of five to seven days, from the fully unripe condition, the amount falls to between 6 and 7 per cent and in six to eight days more to the small amount of somewhat less than 1 per cent. This disappearance of starch is due to the action of a chemical agent, a ferment,[1] which changes it into sugar, a change, as one sees, which alters the net food value only a little (due to respiration), but which renders the fruit more readily digestible. The amount of sugar therefore alters inversely, the amount in the unripe fruit, about 1 per cent, climbing to about 19 per cent (one-third of which is cane-sugar), in the fully ripe condition.

Although the absolute food value of the banana is not greater than that of some other fruits, high though it is, nevertheless when considered in relation to the cost to the purchaser it is probably the highest. This low cost is made possible by the nature of the fruit—especially to the character of the peel which very efficiently protects the pulp and prevents the entrance of bacteria and fungi which might otherwise rapidly cause decay.

Although the peel is at present waste, it may not be superfluous to indicate something of the food and other content since some turn of conditions might very well make the use of the peels imperative. We, in a new country, are too much given to ignoring of waste, and the sting of necessity may one day force an issue.

In the unripe fruit the amount of starch is 4 to 5 per cent. This undergoes alteration into sugar as in the pulp, falling to somewhat less than 2 per cent and giving rise to about 3.5 to 5 per cent total sugars. Besides sugar there is a small but undetermined amount of resins (with fat-like physical properties), the which, so far as I know, have not been studied. These resins are associated in an intimate way with a caouthouc (india rubber), the mixture occurring in large droplets[1] suspended in a clear watery juice or sap, having very peculiar properties. This sap, which contains tannin, the agent responsible for the astringency of the fruit, is found also in numerous large cells scattered in a definite manner throughout both peel and pulp.

Changes in Flavour

These consist of the following: (1) Loss of astringency; (2) increase of sweetness, and (3) development of aroma. We consider them in this order.

Astringency, being due to the presence of tannin, has been thought to disappear through the loss of the tannin by chemical change (oxidation). The fact, however, that tannin is present in the ripe banana, apparently in undiminished quantities, was observed by Jaehkel[1] but he was able to offer no explanation of the apparent contradiction. My own studies of the banana show that this fruit is, in regard to the behaviour of the tannin, in precisely the same case as certain other fruits, among which are the persimmon, sapote, and date.[2]

As above noted, the cells which contain tannin also contain a watery solution of a substance which can be turned into a sort of jelly, and which as a matter of fact does so during the ripening process. As long as the jelly-forming substance remains watery, the tannin comes

1. Studies on Fermentation—The Diseases of eer. Transl. from "Etudes sur la Biere." London, 1879.

2. Prinzen, Geerligs, H. C. Intern. Sugar Journ. 10:378. 1908.

1. Tallarico (in the paper cited) identifies five different ferments, but even this number probably does not include all.

1. These were incorrectly described by Jaehkel as oil-droplets. (Ueber Anatomie und Mikrochemie der Bananenfrucht und ihre Reifungserscheinungen. Kiel, July 24, 1909).

out readily, as can be demonstrated by laying a piece of moist blotting paper on a cut surface of unripe fruit.[3] As, however, the jelly becomes firmer, less tannin can escape from it, so that in four days after the beginning of ripening only a small amount can be taken up by the blotting paper. When the fruit is fully ripe, very little indeed of the tannin can be so separated. More tannin can escape from the peel than from the pulp at all times, though the difference in amount is quite small.

The non-astringency in the banana when ripe is due to the formation of a sort of vegetable leather which cannot give up the tannin (except in very minute amounts and therefore not perceptible to the taste) and which, like true leather, cannot decay. I have kept these curious bodies for eight years in water, and, while the pulp with them has decayed, they themselves have remained in their original condition without change.

In the process of cooking, which itself renders an unripe banana edible, in spite of the tannin present, this substance escapes from the tannin cells and is taken up by the swollen starch. This alone makes the fruit, when thoroughly cooked, non-astringent.

The increase in sweetness, it need scarcely be said, results from the above described increase in sugar, especially cane sugar.

The odour of the unripe fruit is difficult to describe. It is certainly not a pleasant one. In the ripening rooms it is quite noticeable. Gerber[1] investigated the changes which result in aroma, that which is characteristic of "banana oil"[2] or more properly speaking, amyl acetate. At a low temperature (55 degrees) no aroma is developed, which at 85 degrees ethyl- and amyl-alcohol are formed in small amounts, together with acetic,[3] formic and valerianic acids. These together, being volatile, accompanied by a small amount of citric and of malic acid, commonly found in fruits, combine to give the full complement of flavour and aroma. It is important to know, and this should be known by the consumer, that the full aromatic qualities of the fruit are not developed as quickly as the change from starch to sugar. Bananas are as a rule eaten too soon, and furthermore they are frequently kept in too cool a place for the proper development of the aroma. I have found that when a hand of fruit was kept for two or three days in a quite warm place a fruit was obtained which far excelled that newly purchased.

"Condition" of Green Fruit after Transportation

There remains to consider briefly the behavior of green fruit, when received by the wholesale merchant off the cars. The test for condition of fruit in cold weather consists in breaking a fruit in two and observing the exudation of sap.

In fruit which has been cooled, as previously described, I found, in fact, that there was a cessation of active exudation, much earlier than normally. There was, however, an exudation of clear watery sap, but in smaller quantity to be sure. The amount could be increased readily by pressure on the surface of the fruit. This fact made it difficult to think that the cessation of exudation was due to the jelling of the latex, and subsequent observation proved the idea untenable, but, on the other hand, showed that the droplets of oil and india-rubber within each particular cell had run together into a single mass. The masses so formed plug up the ends of the cells, which under mechanical pressure (caused by breaking the fruit and even by the internal pressure due to the large water content) break open into each other and form sap channels through which otherwise the sap would flow.—Fruit Dispatch.

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1. In the paper cited.

2. Lloyd F. E. The Tannin-colloid complexes in the Fruit of the Persimmon, Diospyros. Biochemical Bulletin, 1:7-41. Sept. 1911.

3. Lloyd F. E. A visual method for estimating astringency. Plant World 19: 106-113, April, 1916.

1. Clark, Ernest D. Notes on the Chemical Nature of the "Tannin-masses in the fruit of the Persimmon." Biochemical Bulletin, 2: 412-418, April, 1913.

1. Ann. de Sci. Nat. Ser. VIII (Bot.), 1896, p. 4.

2. This is not the flavouring "extract," of which methyl perlargonate is also a constituent.

3. The amyl alcohol and acetic acid probably form the ester (the above mentioned amyl acetate), which Tallarico in the paper cited holds to be in part responsible for the blackening in the very ripe fruit.

Obtainable Sweets

SUGAR is food in highly concentrated form. It belongs to the carbohydrate group, which includes starch and the cereals. Its important function is to furnish heat and energy for the human body and is especially needed by those engaged in hard manual labor and by growing children. Its food value may be readily understood by the fact that it is easily utilized by the body, 98 per cent of it being available for absorption.

Fortunately for humanity nature has provided each of us with a laboratory for making sugar for systemic use from the other foods in the carbohydrate class. So despite the shortage of sugar, as most people are accustomed to regard it, it is still plentiful and easily obtainable in other forms. Commercial sugar is made from the juices of the sugar cane, the sugar maple, the sugar beet and sorghum cane, which latter, however, belongs to the corn family and is not closely related to the cane.

Dextrose is also well known as a sugar and is found in the syrups made from corn. It is present in some of the fruits and is always present in bees' honey. Maltose is the sugar obtained in malting grains. Lactose is milk sugar and is found in mother's milk and that of all mammals. So if growing children can have plenty of good milk, they will get all the sugar they need to keep them in good physical condition.

Maltose is coming into use more and more as a substitute for sugar and is highly recommended by Uncle Sam's food chemists.

Levulose is a form of sugar found in many of the fruits and in honey. It is one and a half times as sweet as cane sugar and is not so likely to produce acidity in the system. The dried fruits, raisins, prunes, dates and figs, are valuable, therefore, from a dietary standpoint; and if used freely will go far towards supplying our physical needs for sugar. In this way the dried fruits can be made to supplant confections made from sugar; and as they also contain other important elements needed by the body, they will be found both cheaper and better than candy.

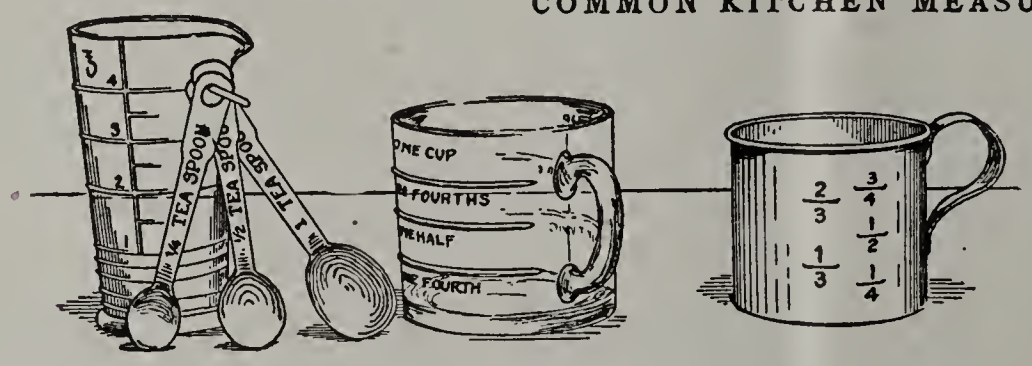
It is asserted by competent authorities that corn syrup is the most valuable sugar substitute we have and is in all probability the most easily obtained. And as the United States is the greatest corn producing country in the world, we have only to convert a part of this important cereal into syrup to be able to supply in a practical way our needs for sweets as an important part of the nation's daily diet.

HOUSEHOLD WEIGHTS AND MEASURES

The object of this card is to present in convenient form the weights and measures tables most useful for household purposes.

In addition to the capacity measures illustrated, every kitchen should be provided with a good household weights and measures test set. This will be found indispensable in checking the amounts of commodities purchased and very useful for a variety of other purposes. A complete set comprises a weighing scale of from 10 to 30 or more pounds capacity graduated to 1 ounce or less, a set of liquid measures, a yard measure or a tape 3 or 6 feet in length, and, perhaps, a set of dry measures. These pieces should be of simple but rugged construction and of satisfactory accuracy, and should, whenever possible, be tested by and bear the seal of a weights and measures official. Efficient housekeeping requires correct measuring.

COMMON KITCHEN MEASURES



From left to right: Four-ounce glass graduate; measuring spoons; glass and metal measuring cups, each having a capacity of one-half liquid pint (8 fluid ounces).

EQUIVALENTS OF CAPACITY
(All measures level full)

3 teaspoons	=	1 tablespoon
½ fluid ounce	=	
4 fluid drams	=	
15 cubic centimeters	=	
16 tablespoons	=	1 cup
2 gills	=	
½ liquid pint	=	
8 fluid ounces	=	
237 cubic centimeters	=	
1 liquid pint	=	2 cups
16 fluid ounces	=	
473 cubic centimeters	=	

LIQUID MEASURE

8 fluid drams	=	1 fluid ounce
4 fluid ounces	=	1 gill
4 gills	=	1 pint
2 pints	=	1 quart
4 quarts	=	1 gallon
231 cubic inches	=	
31½ gallons	=	1 barrel
2 barrels	=	1 hogshead

DRY MEASURE

(For fruits, vegetables, and other dry commodities)

2 pints	=	1 quart
8 quarts	=	1 peck
4 pecks	=	1 bushel
2150.42 cubic inches	=	
105 quarts	=	1 barrel
7056 cubic inches	=	

The pint and quart dry measures are about 16% larger than the pint and quart liquid measures.

AVOIRDUPOIS WEIGHT

27 11/32 grains	=	1 dram
16 drams	=	1 ounce
16 ounces	=	1 pound
25 pounds	=	1 short quarter
28 pounds	=	1 long quarter
100 pounds	=	1 short hundredweight
112 pounds	=	1 long hundredweight
2000 pounds	=	1 short ton
2240 pounds	=	1 long ton

LINEAR MEASURE

12 inches	=	1 foot
3 feet	=	1 yard
5½ yards	=	1 rod
16½ feet	=	
40 rods	=	1 furlong
8 furlongs	=	1 statute mile
320 rods	=	
1760 yards	=	
5280 feet	=	
6080.20 feet	=	1 nautical mile

NOTE.—A "knot" is a speed of 1 nautical mile per hour.

SQUARE MEASURE

144 square inches	=	1 square foot
9 square feet	=	1 square yard
30¼ square yards	=	1 square rod
160 square rods	=	1 acre
43560 square feet	=	
160 acres	=	1 quarter section
4 quarter sections	=	1 square mile
640 acres	=	
36 square miles	=	1 township

CUBIC MEASURE

1728 cubic inches	=	1 cubic foot
27 cubic feet	=	1 cubic yard
144 cubic inches	=	1 board foot
128 cubic feet	=	1 cord*

*The use in trade of the so-called "lace cord," which is less than the above, is illegal.

APPROXIMATE WEIGHTS OF SOME COMMON DRY COMMODITIES

	Pounds per bushel		Pounds per bushel
Apples	44 to 50	Peaches	48 to 50
Beans	60	Peanuts	20 to 25
Beets	50 to 60	Pears	45 to 58
Carrots	50	Peas (dried)	60
Cranberries	32 to 40	Potatoes (white)	60
Cucumbers	48 to 50	Potatoes (sweet)	50 to 56
Onions	50 to 57	Tomatoes	50 to 60
Parsnips	42 to 50	Turnips	50 to 60

Ice:		
1 cubic foot	=	57.2 pounds
30 cubic inches	=	1 pound
Sugar, granulated:		
1 cup	=	½ pound
Butter: 1 cup	=	½ pound
Lard: 1 cup	=	½ pound
Flour: 1 cup	=	¼ pound
Rice: 1 cup	=	½ pound
Cornmeal: 1 cup	=	5 ounces
Raisins (stemmed): 1 cup	=	6 ounces
Currants (cleaned): 1 cup	=	6 ounces
Bread crumbs (stale): 1 cup	=	2 ounces
Chopped meat (packed): 1 cup	=	½ pound

These weights are approximate only and should not be used in trade for determining whether correct measure is given or received. Information concerning the weights per bushel of dry commodities which are legal in your State may be obtained by consulting your State laws, your sealer of weights and measures, or Circular No. 10 of the Bureau of Standards.

INTERNATIONAL METRIC SYSTEM

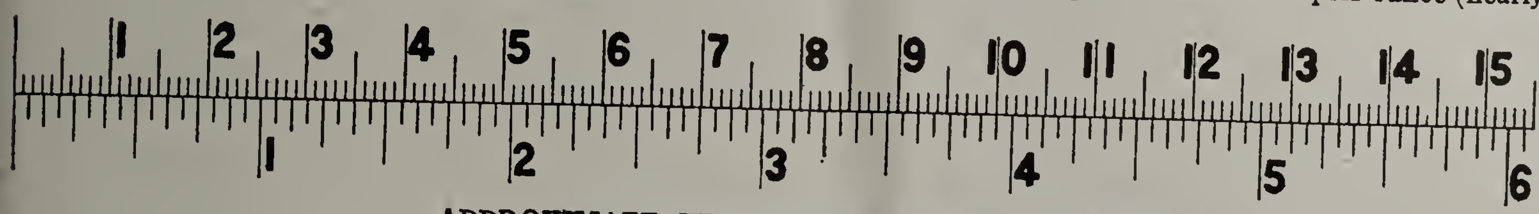
The fundamental unit of the metric system is the METER (the unit of length). From this the units of mass (GRAM) and capacity (LITER) were derived. All other units are the decimal subdivisions or multiples of these. These three units are simply related, so that for all practical purposes the volume of one kilogram of water (one liter) is equal to one cubic decimeter.

When the meaning of the three units and the six prefixes (shown in second column) is known, the metric system is understood. The design of the system makes it self-explanatory. The tables of derived units form themselves automatically. No tables need be or should be memorized.

Smaller and larger units are named by combining the proper numeral prefix with the name of the basic unit. The new term is self-defining—for example, "centi-meter." Here "centi" means "the one-hundredth part of," and "meter" means "the unit of length," so that "centi-meter" expresses precisely its meaning, "the one-hundredth part of the unit of length." Every other metric term is as easily formed and expresses as clearly its own definite meaning.

Name	Value	Meaning
METER	1.	"the unit of length"
LITER	1.	"the unit of volume"
GRAM	1.	"the unit of weight"
ARE	1.	"the unit of area"
MILLI-	.001	"the thousandth part of"
CENTI-	.01	"the hundredth part of"
DECI-	.1	"the tenth part of"
DEKA-	10.	"ten times"
HECTO-	100.	"one hundred times"
KILO-	1000.	"one thousand times"

One meter=39.37 inches (exactly); 1 liter=1.06 quarts (nearly); 1 gram=0.04 avoirdupois ounce (nearly).



CENTIMETERS

1 cm=.3937 inch
1 inch =2.54 cm

INCHES

APPROXIMATE WEIGHTS OF SOME COMMON MATERIALS

Name	Pounds per cubic foot
Coal:	
Bituminous (piled loose)	44 to 54
Anthracite (piled loose)	50 to 57
Coke (piled loose)	23 to 32
Charcoal of pine and oak	15 to 30
Earth (common loam):	
Dry, loose	72 to 80
Moist, moderately packed	90 to 100
Soft mud, packed	110 to 120

Name	Pounds per cubic foot
Masonry:	
Brickwork	100 to 140
Roughly scabbled mortar rubble	140 to 150
Mortar, hardened	103
Sand	90 to 117
Gravel	90 to 117
Trap, quarried, in loose piles	107

Name	Pounds per 1000 board feet	Pounds per cubic foot
Woods:		
Fir (balsam)	2170	26
Hemlock	2330 to 2580	28 to 31
Maple	3250 to 3920	39 to 47
Oak	3080 to 4670	37 to 56
Pine (American white)	1830 to 2580	22 to 31
Pine (yellow)	1920 to 3080	23 to 37
Poplar	1830 to 2580	22 to 31

The wood is supposed to be seasoned and of average dryness.

COMMON RULES OF MEASUREMENT

Rectangle ....Area=length×width

Solid with rectangular sides........Volume=length×width×height

Circle:
Circumference=3.1416×diameter
Area=0.7854×diameter×diameter

Cylinder:
Area (exclusive of that of ends)=3.1416×diameter×height
Volume=0.7854×diameter×diameter×height

Circular No. 55, of the Bureau of Standards, entitled "Measurements for the Household," contains in popular form a large amount of information which is very useful about the home. In addition to discussing weighing and measuring as done in the up-to-date kitchen, this circular treats of the measurement and economical use of heat, light, gas, electricity, water, time, etc. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents each.

HEIGHTS AND WEIGHTS OF CHILDREN

AGE	BOYS Height		BOYS Weight			GIRLS Height		GIRLS Weight		
yr. mo.	*inches*	*centi-meters*	*lbs.*	*oz.*	*kilograms*	*inches*	*centi-meters*	*lbs.*	*oz.*	*kilograms*
At birth	20⅝	52.3	7	10	3.45	20½	52.1	7	3	3.25
3	23½	59.7	13		5.90	22	55.9	13	0	5.90
6	26½	67.3	18		8.16	25⅞	65.7	16	12	7.60
7	27¼	69.2	19	2	8.68	26½	67.3	17	6	7.88
8	27⅝	70.2	19	12	8.96	27	68.6	18	4	8.28
9	28⅛	71.4	20	6	9.24	27⅝	70.2	19	2	8.68
10	28½	72.4	20	14	9.47	27⅞	70.8	19	8	8.84
11	29	73.7	21	6	9.70	28⅜	72.1	20	2	9.13
1	29⅜	74.6	21	14	9.92	28⅞	73.3	20	12	9.41
1 1	29⅞	75.9	22	14	10.38	29⅜	74.6	21		9.52
1 2	30¼	76.8	23		10.43	29½	74.9	21	10	9.81
1 3	30¾	78.1	23	10	10.72	30⅛	76.5	21	14	9.92
1 4	31⅛	79.1	24	2	10.94	30½	77.5	22	10	10.26
1 5	31⅜	79.7	24	8	11.11	30¾	78.1	22	14	10.38
1 6	31¾	80.6	24	10	11.17	31⅛	79.1	23	6	10.60
1 7	32¼	81.9	25	8	11.57	31½	80.0	23	12	10.77
1 8	32⅝	82.9	25	12	11.68	32	81.3	24	2	10.94
1 9	32⅞	83.5	25	12	11.68	32¼	81.9	24	12	11.23
1 10	33¼	84.4	26	14	12.19	32⅝	82.9	25	4	11.45
1 11	33⅝	85.4	27		12.25	32⅞	83.5	25	10	11.62

AGE	BOYS Height		BOYS Weight			GIRLS Height		GIRLS Weight		
yr. mo.	*inches*	*centi-meters*	*lbs.*	*oz.*	*kilograms*	*inches*	*centi-meters*	*lbs.*	*oz.*	*kilograms*
2	33¾	85.7	27	2	12.30	33⅜	84.8	26	6	11.96
2 3	34¾	88.3	29		13.15	33⅞	86.0	27	4	12.36
2 6	35⅜	89.9	29	8	13.38	34⅞	88.6	28	4	12.81
2 9	36⅛	91.8	30	10	13.89	35⅝	90.5	29	2	13.21
3	37⅛	94.3	32	4	14.63	36¾	93.3	30	8	13.84
3 3	37⅞	96.2	33	2	15.02	37¼	94.6	31	10	14.34
3 6	38⅝	98.1	33	12	15.31	38	96.5	32	8	14.74
3 9	39	99.1	34	8	15.65	38½	97.8	33	4	15.08
4	39½	100.3	35	14	16.27	39	99.1	33	12	15.31
5	41⅝	105.7	41	2	18.64	41¼	104.8	39	11	18.01
6	43¾	111.1	45	3	20.50	43⅜	110.2	43	5	19.64
7	45¾	116.2	49	2	22.27	45½	115.6	47	8	21.55
8	47¾	121.3	53	14	24.45	47⅝	121.0	52		23.59
9	49¾	126.4	59	3	26.85	49⅜	125.4	57	2	25.90
10	51¾	131.4	65	5	29.62	51¼	130.2	62	6	28.30
11	53¼	135.3	70	3	31.84	53⅜	135.6	68	13	31.21
12	55⅛	140.0	76	14	34.88	55⅞	141.9	78	5	35.52
13	57¼	145.4	84	13	38.46	58¼	148.0	88	11	40.23
14	59⅞	152.1	94	14	43.05	59⅞	152.1	98	6	44.63
15	62¼	158.1	107	2	48.58	61⅛	155.3	106	2	48.13
16	65	165.1	121		54.88	61⅝	156.5	112		50.80

The data for this table were furnished by the Children's Bureau, United States Department of Labor, and is collated from such leading authorities as Holt, Crum, Bowditch, and others. There is a variation in height and weight of healthy children of the same age which should be taken into account in using the above figures to judge normal development.

Jelly

By C. H. CAMPBELL, Garrett & Co., Brooklyn, N. Y.

ALTHOUGH jelly is a scientific product, it has never been considered as such by manufacturers. It should be so accurate scientifically that manufacturers can bring their raw materials together in the proper proportions and be sure to obtain a good, reliable commercial product.

To produce jelly, the proper proportions of acid, pectin and sugar are necessary. While much has been said as to the proper amounts of acid and sugar, nothing has ever come to the author's attention which demands a definite percentage of pectin as the fundamental basis for commercial jelly manufacturing. The following results prove that this is the only true basis.

It has been found that:

1. An excess of pectin produces a firm, tough jelly and decreases the amount. A pectin content of 1.25 per cent produces a fine commercial jelly; whereas, 1.0 or 0.75 per cent of pectin produces a delicate quality resembling home-made jelly.

2. An acidity of 0.3 per cent (as sulfuric acid) is necessary to produce a good quality, the minimum being 0.27 per cent and the maximum 0.5 per cent.

3. We know also that an excess of sugar produces a soft jelly, while an insufficient amount results in a tough product.

In an endeavor to determine the minimum amount of pectin necessary to produce jelly, several series of experiments were run, varying the per cent of pectin used but keeping the acidity and sugar constant. The following results were obtained:

As the result of these tests special attention should be called to the fact that, regardless of the per cent of pectin in the juice used, the same amount of jelly was obtained.

The amount of sugar which would produce the best quality of jelly for commercial industries was next determined. A series of tests was run with various amounts of sugar per gallon of apple juice of a 1.25 per cent. pectin content.

ANALYSIS OF JUICE

Specific Gravity	1.021
Acidity, Per cent	0.43
Pectin, Per cent	1.30

With this juice 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 pounds of sugar were used for each gallon of juice. The jelly became delicate and sweeter as the amount of sugar increased. The lot containing 5 pounds of sugar per gallon of juice was selected as best in texture for commercial use, but the lot containing 6 pounds was considered best in flavor. The 9 to 11 pound batches produced a fine, delicate jelly, which is more like home-made, but entirely too delicate for commercial use, and really too sweet to be relished.

Using as a base 1.25 per cent pectin with 5 pounds of sugar per gallon, the following table which can be applied to an apple juice has been worked out:

SERIES I

	Original Apple Juice 1.22% Pectin	Diluted to 0.75% Pectin	Diluted to 0.5% Pectin
Volume, Gal.	1	1	1
Specific Gravity	1.017	1.010	1.005
Acidity (as H_2SO_4) per cent	0.113	0.074	0.054
Sugar, per Gal.	3 lbs. 10 oz.	3 lbs. 10 oz.	3 lbs. 10 oz.
Acid (citric or tartaric) added,* grams	10	15	20
Cooked to ° F.	220	220	220
Yield, 8 oz. glasses	12	12.5	12
Quality	Firm, O.K.	Too soft for commercial use, but fine quality.	

*Acid was added to juice to make acidity 0.3 per cent (as H_2SO_4) in each case.

SERIES II

	Original Juice	Juice Diluted to			
Pectin, Per cent	1.695	1.3	1.0	0.75	0.5
Volume, Pint	1	1	1	1	1
Specific Gravity	1.038	1.025	1.020	1.016	1.012
Acidity (as H_2SO_4), Per cent	0.25	0.21	0.16	0.14	.....
Sugar, Lb.	0.5	0.5	0.5	0.5	0.5
Acid added to bring per cent up to	0.25	0.3	0.3	0.3	0.34
Cooked to ° F.	222	221	222	222	222
Yield, 8 oz. glasses	1.5	1.5	1.5	1.5	1.5
Quality	Clear but dark	Fine, O. K.	Good	Good, too soft	Too soft

SERIES III

	Original Juice	Juice Diluted to	
Pectin, Per cent	1.62	1.0	0.75
Specific Gravity	1.020	1.017	1.012
Acidity, Per cent	0.118	0.073	....
Sugar, Lbs. per Gal.	4.25	4.25	4.25
Acid added, grams	7	15	20
Cooked to ° F.	221	221	221
Yield, 8 oz. glasses	13	13	13.5
Quality	Firm and stiff	Very good	Little soft

SERIES IV

	Original Juice	Juice Diluted to				1% Pectin Base with Increased Sugar
Pectin, Per cent	1.59	1.25	1.0	0.75	0.5	....
Volume, Gal.	1.5	1.5	1.5	1.5	1.5	1.5
Specific Gravity	1.017	1.012	1.008	1.007	1.006	1.017
Acidity, Per cent	0.25	0.21	0.176	0.132	0.113	0.25
Sugar added, lbs.	5 lbs. 1 oz.	5 lbs. 1 oz.	5 lbs. 1 oz.	5 lbs. 1 oz.	5 lbs. 1 oz.	8
Acid added, tsp*	1	1	1	1	1	1
Cooked to ° F.	219	219	219	219	219	219
Yield, 8 oz. glasses	16	18	18.5	18	17	28
Quality	Very firm	Firm	Delicate	Soft	Soft	Good

*Teaspoonful acid (made by dissolving 1.5 lbs. acid per gal. water) added to each glass, rather than cooking with juice. Juice prepared by cooking pomace 2 hrs. with 0.5 oz. acid for each lb. pomace.

A relationship between the Brix hydrometer reading of juice made from apple pomace and the amount of sugar to be added per gallon of juice. For every degree Brix, use a pound of sugar.

For example, if the juice reads 5.6 degrees Brix, use 5.6 pounds of sugar for every gallon. This will produce a fine, clear jelly, which is firm and will stand up under almost any climatic conditions. A more delicate jelly can be made by increasing the sugar to 1.25 lbs. per every degree Brix. The greater the amount of sugar the greater the yield.

SUGAR FOR APPLE JUICE—PECTIN BASE

Pectin Per cent	Sugar per gallon of Apple Juice Lbs.	Oz.	Pectin Per cent	Sugar per gallon of Apple Juice Lbs.	Oz.
0.50	2.0	...	1.25	5.0	...
0.60	2.0	6.4	1.30	5.0	3.2
0.70	2.0	12.8	1.40	5.0	9.6
0.8	3.0	3.2	1.50	6.0	...
0.90	3.0	9.6	1.60	6.0	6.4
1.00	4.0	...	1.70	6.0	12.8
1.10	4.0	6.4	1.80	7.0	3.2
1.20	4.0	12.8	1.90	7.0	9.6
			2.00	8.0	...
			2.50	10.0	...
			3.00	12.0	...

Since these results have been obtained, there has also been found a

Qualitative Determination of Pectin.—The only test for pectin in

use at present is the alcohol precipitation method where the pectin is precipitated with alcohol, dissolved in water, evaporated to dryness, dried, weighed, burned and reweighed, and the loss in weight expressed as pectin. Most methods call for a concentration of over 50 per cent alcohol in testing, but this is hardly sufficient as the sugars and other soluble substances are held in the concentrated mass of pectin precipitated.

The author used 10 cc. of filtered juice and 180 cc. of alcohol, adding the juice drop by drop from a pipette, with vigorous stirring. It was filtered immediately, dissolved in boiling distilled water, evaporated to dryness, heated two hours at 70 degrees C. *in vacuo,* weighed, ashed, and reweighed. The loss in weight multiplied by 10 equaled the per cent of pectin. It was not necessary to let the precipitate stand any length of time, as no further precipitate formed. The precipitate could be filtered through a Gooch crucible, thereby eliminating the dissolving and drying, often saving about two hours in handling.

A physical indication of the amount and quality of the pectin present in the juice may be obtained by observing the precipitation of the pectin as the juice is slowly run into the alcohol where the proportion of 10 cc. of juice to from 150 to 180 cc. alcohol is used. When the pectin amounts to over one per cent it will gather in a cohesive gummy mass, but if the amount is less, the precipitate is flocculent and will not gather in a solid mass. A little care in observing this precipitation will give a rough but quick check on the juice to be used.

The results obtained by using this quantitative method of determining pectin have been so concordant that they have been successfully applied to commercial jelly manufacturing, resulting in an increased production and an improved product. By thus controlling the manufacturing of jelly from a pectin standpoint it is possible to obtain a more uniform product than the average jelly manufacturer secures.—*Jour. Ind. and Eng. Chem.,* Vol. 12, No. 6.

Peanut Milk

By DR. GEORGE W. CARVER Department of Research and Experiment Station, Tuskegee Institute, Tuskegee, Ala.

PEANUT milk consists of a perfect emulsion of the oils, fats, proteids, carbohydrates and some of the ash of peanuts. When properly made it is one of the most perfect and stable emulsions. This milk can be made direct from the nuts or from the peanut cake or meal.

The following comparison in percentage composition between cow's milk and peanut kernels will furnish much food for thought:

	Water	Ash	Protein	Fiber	Carbohydrates	Fat
Cow's Milk	87.2	.7	3.6	.0	4.9	3.7
Peanut Kernels	7.5	2.4	27.9	7.0	15.6	39.6

Since the quantity of fats, carbohydrates and proteids can be controlled, many different grades of milk can be produced; in other words, it can be made as rich or as poor as one's individual needs demand or fancy dictates. Some of the grades are practically identical in looks and physical character with those of cow's milk, and if you did not know one was peanut milk and the other cow's milk, the eye would never detect the difference. The keeping qualities are about the same as that of cow's milk; the less fat and protcids there is in it, the longer it will keep. When it sours, the clabber or curd is about the same in quantity and physical appearance as that of cows' milk. A rich, fatty scum riscs on somc of thc grades, similar to that of cows' milk.

The possibilities of peanut milk and its products are practically unlimited. Some of thc possibilities are:

For culinary (cooking) purposes, both thc sweet and the sour milk can be used in the same way as cows' milk and makes a very satisfactory substitute.

In taste there is a great variation, ranging from almost or quite no taste to the most pronounced flavor.

The curd can bc converted into many fancy types of cheese, such as the pimento, nut sage, tutti fruiti, chocolate fillers, cream bonbons, etc., etc.

Many fancy salads can be made from thesc curds, as well as a superior body for mock meat dishes.

The rich cream may be used on fruit, in coffee, on breakfast cereals, etc., and makes a most acceptable substitute for the cream from cows' milk. It also makes the most delicious ice cream, smooth in grain, fine in appearance and of a wonderful flavor. Lemon, orange, pineapple, mint, wintergreen, vanilla and nearly all of the fruit juices blend with it beautifully and without curdling.

The buttermilk has a mild, pleasing, acid taste, closely resembling fresh buttermilk made from cows' milk. A very popular drink for soda fountains, hotels, restaurants, etc., is produced from this milk.

The whey, which is a very pretty pale straw color, makes a delicious beverage when iced and flavored to taste. It has but few, if any, superiors for making fancy fruit punches.

The sweet milk, when used in making yeast bread, gives the loaf or rolls an exceedingly rich flavor, very similar to the much-prized milk bread. It should prove attractive to bakers as well as the home for making bread, rolls, cakes, etc., etc.

It is excellent for creaming vegetables. It does not lose its milky consistency, even though the vegetables are cooked in it. It has been tried out with quite a number and with every one proved highly satisfactory.

Since this milk is a purely vegetable product, it is not only free from, but may be kept free from, harmful germ contamination, ranging as it does so high in proteids and carbohydrates, together with the interesting fact that the peanut is eaten, relished and easily digested by everybody wherever it is known; therefore, as a nourishing drink for children and invalids, it will have but few, if any, equals.

As a food for young growing stock, there is an equal possibility.

The milk may be condensed or dried, the same as cows' milk. Butter can be made from the milk, but is easier and more satisfactory made from oils and fats direct.

It takes but a glance at the above facts to convince the reader that there are practical limitless possibilities for peanut milk. Much study, experimentation and demonstration alone are necessary to develop all of its many good qualities, and chemists, dietitians and food specialists will continue to develop this wonderful product until its superior characteristics force it into every home.

Fresh Mushrooms Every Day in the Year

AMONG the many new developments and changes in established businesses which were more or less directly affected by the enactment of prohibition—developments which, indeed, resulted from a prompt and vigorous readjustment of material resources and invested capital—one of the most novel and interesting, surely, is the transformation of the well-known Hupfel Brewery, at One Hundred and Sixty-first Street and Third Avenue., New York, into a remarkable plant for the cultivation of mushrooms. Indeed, the Hupfel-Carrar mushroom plantation, which proved to be a very successful experiment in the Summer of 1919, now bids fair to surpass the fame of the former brewery and to become known as the most modern, sanitary and up-to-date plant of its kind in the world.

Being fond of mushrooms, and having experimented with raising them for some years, Mr. A. G. Hupfel, Jr., decided, last year, not to let his big plant be submerged in the tidal wave of prohibition which was rising to sweep over the length and breadth of the land; but instead to turn it into good and profitable account, making it an asset rather than a liability. Accordingly, he undertook to provide a mushroom plantation, operated on the most scientific plans, which would enable the hotels and restaurants, as well as the public of New York City, to obtain the finest mushrooms grown, within two or three hours after they are picked from the beds; it being essential to the highest quality of mushrooms that they be served just as quickly as possible after they have been picked, in order to retain their marvelous flavor and to avoid becoming stale and leathery.

For the purpose of solving the many intricate problems in the new industry, scientists and specialists in mushroom cultivation were brought together to confer upon various aspects of the venture; large sums of money were spent for supplies and equipment. For the first season, last Summer, which Mr. Hupfel terms the experimental stage, about one hundred thousand square feet of the brewery basement were the dimensions of the initial plantation and the "French bed system" was employed; narrow, rounded beds of rich loam extending in almost endless parallel rows along the floor of the cellars. Later it was decided to triple this space by installing another system, the American one, which makes use of heavy wooden trays filled with the loam and placed in tiers upon a series of steel racks or supports, thus providing three hundred thousand square feet of beds. That Mr. Hupfel's plans have worked out satisfactorily there can be no doubt, for he has supplied most of the best hotels and restaurants in the metropolis, and each day, as the news of this interesting plantation spreads, new customers are added to the rapidly growing list.

Last Summer the largest crop, or picking, in a day was four hundred and thirty-five pounds of mushrooms from the Hupfel-Carrar plantation; soon, when the plant is running to capacity, they will gather from twelve hundred to fifteen hundred pounds daily. Capacity operation of the big plant has been somewhat retarded, owing to the uncertainty of labor conditions, which have delayed the erection of the interior steel work and, in turn, the planting of the spawn. Hence the present limited number of contracts for limited amounts of mushrooms, a condition which will see marked improvement in the near future.

Associated with Mr. Hupfel is Mr. F. P. Carrar, a Frenchman, who has devoted thirty years of his life to the development of the mushroom industry in France. Mr. Otto G. Hupfel has charge of the mechanical and operating departments of the plantation. Last Autumn Mr. Carrar went to France and returned with the spawn for Winter planting. During his absence men trained in the industry took charge of the richly productive beds and developed the extension of space under cultivation. Mr. Hupfel is particularly gratified at the result of his experiments, insomuch as it has been proven that he is raising almost three times the quantity of mushrooms per square foot that is customary in plantations operated less scientifically.

Located in the subterranean cellars of the ex-brewery—long vaults cut through the solid rock where for many years thousands of barrels of beer had been stored—the mushroom beds in their big trays supported on timber or steel racks are an interesting sight as they stretch in long perspective down the cool, moist, dimly lighted tunnels. From the outer air and the daylight, one steps into an underground chamber, closing the heavy door, and walks down narrow aisles, inhaling the cool air laden with the pleasantly faint odor of earth and of fresh mushrooms. Electric bulbs affixed to the metal ceiling of the vault shed a soft light on the long mounds of earth which contain mushrooms in every stage of their growth. From the little spots of silvery gray spawn taking root on the surface of the mound spring the tiny "pearl" mushrooms which, in the course of a week or ten days, develop into mushrooms two or three inches in diameter, fully grown and ripe, ready to be picked. Sheltered from the atmospheric conditions outside, they grow rapidly, covering the bed with their delicate white globes.

Speaking of ripeness, the way to tell a perfectly ripe mushroom is to press gently the under surface, or veil; when this gives to the pressure of the thumb, the mushroom is ripe. If this delicate skin or membrane which protects the "gills" is already broken and the gills are exposed, the mushroom is overripe and its decay will begin very soon. Only when the veil still covers the gills is the mushroom in prime condition, retaining its exquisite flavor. It is then "a morsel for a monarch!"

At the Hupfel-Carrar plantation the ripe mushrooms are picked from seven to ten o'clock each morning and they are carefully packed in baskets and delivered, "with the dew on them," from one to two o'clock in the afternoon. This is an important point. As a rule, the best mushrooms ordinarily seen on the market are usually twenty-four hours old and more often two or three days old before they reach the table. It is the promptness of delivery, by automobile, which explains why mushrooms from this plantation retain their weight, tenderness and flavor and why they have come to be in such tremendous demand by the great hotel industry of the city. To the epicure, the true lover

(Continued on page 41)

Sanitary Control of Food Manufacturing Plants

By L. M. TOLMAN

THERE are at least two standpoints from which this subject of sanitary control of food manufaeturing plants may be discussed; one from the standpoint of eontrol of disease distribution and second from the standpoint of the prevention of spoilage and loss of food value through improper handling, and it is from this latter standpoint that I am going to direct my discussion.

Cleanliness is next to Godliness in the manufacture of all food products, not only from the standpoint of deeeney, but also from the standpoint of business efficiency, that is, in the prevention of loss by spoilage which is a very material and important question in the handling of all food products. By cleanliness I mean not only the superficial cleaning, but that real cleanliness which prevents bacterial infections and removes bacterial contamination as well as the more apparent dirt. Keeping qualities of foods, especially sueh foods as meats and similar products, is a most important factor in their value, and we know that some products keep much better than others of the same general eharacter, some manufacturers' products keep better than other manufacturers' products of the same kind, and I believe that in many cases a study of the fundamental facts would show that the relative keeping qualities is dependent to a large extent on cleanliness and sanitation in the methods of handling the products. Of eourse, I do not mean to indicate that a product does not have to be properly handled after manufactured, but it is the initial contamination of a produet brought about in its manufacture that has the most to do with its future keeping qualities, and it is upon the subject of what really eonstitutes cleanliness that I desire to enlarge to a certain degree at this time.

For instance, in order to illustrate what I mean by cleanliness, I am going to give two or three concrete illustrations. I think the most striking illustration, perhaps, that has been given publicity in the last few years is the work of Dr. Chas. E. North, of the New York Milk Commission, on clean milk. And along with this I would not forget the work of the Bureau of Animal Industry on clean milk, and espeeially their work on the vital necessity of sterilization of milk cans and other utensils used on the farms. The point whieh I got from Dr. North and from his work and from the work of the Bureau of Animal Industry, and my own experience in connection with the study of milk supplies of various cities, while I was connected with the Bureau of Chemistry, U. S. Dep. of Agrieulture, is that you cannot produce clean milk by what are known as ordinary methods of cleanliness such as washing, scrubbing, and rinsing of the utensils used in the handling of milk, but that it is absolutely essential that these utensils be sterilized. Every utensil which comes in contact with the milk from the time of milking to its final delivery, should be sterilized in order to produce a milk which has satisfactory keeping qualities as well as a milk which is sanitarily clean.

The necessity of sterilizing of utensils used in the handling of foods was never so strongly impressed upon me as it was during the work done two years ago under my supervision in the study of milk supply at St. Louis, where we compared milk handling in the ordinary way in a good clean dairy with milk handled in the same way, but the buckets, pails, and cans sterilized. The result was most astounding as regards the keeping qualities of the milk handled in the sterilized containers. We found, as a matter of fact, that the unsterilized containers, even though they had been washed, eontained sueh large numbers of bacteria that the milk placed in them received a large immediate contamination that the speed of deeomposition was tremendously increased. This is true, in my judgment, as regards the handling of any similar food product and that many losses by spoilage of such easily decomposed foods as milk could be overcome by sterilization of machinery and other pieees of apparatus coming in contaet with the product at various stages of its manufaeture. It is also true from the experience of manufacturers that products which have begun to spoil or deteriorate are very difficult to properly preserve afterwards. This has been emphasized in a number of reports; for instance, Dr. Bitting of the National Canners Laboratory called attention to the faet that peas which had been allowed to become infeeted in the fields or had become sour in the handling were much more difficult to sterilize in the future canning operations, and spoilage occurred although the processing given to them was sufficient to properly sterilize clean and sound peas. I think this is more or less an experienee with all food products, that products whieh have begun to spoil are more likely to spoil even if they are to be eanned and proeessed later.

Another illustration of the point which I have in view in connection with this discussion was brought to my attention of some investigation earried on several years ago while I was connected with the Bureau of Chemistry, in connection with the manufaeture of edible gelatine. In one plant we found that the finished product was badly infected and much deteriorated and more or less decomposed, and yet the utmost efforts had been made to keep the plant clean and sanitary, but a study of thc situation showed that the real source of trouble in this partieular ease was the use of the water for washing the knives and spraying the gelatine slabs while they were eut into thin layers to be placed on the drying frame. We found that the water was badly contaminated and was, as a matter of fact, inoculating the gelatine so that while it was drying on the frames a very material growth of bacteria took place and the product was very materially deereased in value as an edible gelatine, and while the water appeared from the ordinary standpoint to be a pure, clean water, bacteriological tests of this water showed conclusively that this was the souree of trouble and that the finished product could not be called a clean produet because it had come in contact with the water which may be called dirty.

In many instances in the study of the handling of food products, we have been able to find by going back over the various steps in the handling of the product that in some particular point, a bacterial infection was being imparted to the food and was the cause of the future lack of keeping qualities and that the remedy in most cases was extremely simple. I remember in connection with this same gelatine investigation mentioned above, in another factory we found by taking samples of the gelatine from its first stage of manufacture through each operation that there was one point where a large cock was so arranged that a small amount of gelatine remained in it in spite of the washing. This gelatine remained here at a warm temperature between the operations, two or three hours, and enormous quantities of bacteria developed and contaminated the next run so seriously that at times the gelatine would liquify upon the drying trays. This was climinated by simply steaming out the cock after each operation.

I could go on and illustrate by a number of similar experiences that have come to me in the course of my experience, but the point which I desire to impress particularly at this time is the necessity of scientifically going after the manufacturing operation, studying it from the beginning to end, and I am sure that the science of bacteriology will prove a most tremendous help in the study of these problems, in that it is a most sensitive indicator of the points where trouble is likely to develop and a tremendous amount of time and energy is often wasted because of the fact that a systematic study has not been made in this way to determine the actual point where the trouble arises and eliminate it. There is a tremendous field of operation for trained workers along this line of the sanitary control of good manufacturing, particularly from the standpoint of the prevention of spoilage, and at this time everything should be done to prevent spoilage, as it means loss of food both as regards quality and quantity.

Juice of the Logan Blackberry Makes Healthful, Cooling, Invigorating Drink

Soft drinks — "soft" in slang meaning "easy to get" have attained a new importance. Soft drinks made from fruit juices doubtless will attract many new devotees, who will find that beverages made from pure fruit juices are decidedly healthful, cooling, refreshing, and invigorating, says the United States Department of Agriculture.

Because of its pleasant flavor, the juice of the Logan blackberry, commonly known as the loganberry, is very popular as a beverage. The berry is also used in making jams, jellies, and soda-fountain syrups. Methods of extracting and treating the juice are constantly being bettered. This industry, already a large one, is growing rapidly.

Making of Logan Blackberry Juice

The Department of Agriculture, through its Bureau of Chemistry, has done much investigational and experimental work on the juice from the Logan blackberry, or loganberry. Results are reported in Department Bulletin 773, and information relative to the culture of this fruit is contained in Farmers' Bulletin 998.

The berries are crushed as soon after picking as possible to prevent any moulding. From the crushers the pulp is put into press cloths and piled in the presses. Heavy pressure extracts the juice, leaving the pulp in a more or less dry cake. The juice is then sterilized and placed in cans for storage.

Uniformity Secured by Blending

Because of variations in the flavor and character of the juice at different periods of the season, all juices are blended before being bottled to secure a uniform product for the market.

Blending is done by "racking off" the cans, filtering the juice, and then sending it to the blending and mixing tanks. From the tanks it goes to the bottling machine. After bottling the juice is pasteurized by heating it to from 165° to 180° F. for periods varying with the size of the bottles. It is then labeled for the market.

The Juice as a Beverage

Loganberry juice is naturally so sour that it is necessary both to dilute and to sweeten it to obtain a drinkable article. The berry has a characteristic flavor. It somewhat resembles that of the raspberry, both red and black, but is more acid than either.

Adding enough sugar to reduce sufficiently the tartness of the juice makes a product too sirupy to drink, unless it is diluted at the same time. The syrup prepared for soda-fountain use is not diluted until sold over the counter. Some of the sweetened but undiluted juices have been labeled by manufacturers as "concentrated." This description is unwarranted, as the juices have not been concentrated or evaporated, but simply sweetened. They should be properly labeled as loganberry syrups.

Purpose and Results of Investigation

The object of some of the investigational work of the Department of Agriculture was to establish methods for the detection of dilution common in commercial products of the Logan blackberry; and to set analytical standards for such products.

The juices from berries grown in Washington and Oregon differ markedly in composition from those produced in California. Those of the northern section have a higher acid and a lower ash content than California juices. So far it has been impossible to determine accurately the amount of water added to the juices by the manufacturers. Its presence can be detected, however, and the amount roughly approximated.

Turkish Meat Packers Reform

Meat packing is being revolutionized in many Constantinople establishments since the advent of the American Red Cross.

When the supplies of fresh meats began to arrive at the Refugee Camp on the Island of Proti, where that organization is caring for one thousand refugees, it came in the usual Turkish style, the carcasses hanging in packing boxes, left open on one side for easier handling, and strapped two to a donkey, on the patient beasts. Flies and germs held revel all the way from the docks to the warehouses.

"Right about face!" ordered the Red Cross officers when they saw the medley of meat and flies.

Seeing that they must either conform to these unheard of standards of sanitation or lose a profitable patronage, the Turkish meat vendors mended their ways.

Wrapped Hams and Net Weights

The law which requires the marking of wrapped hams and sides of bacon with the net weight has not entirely solved the net weight problem with respect to these products. Buyers occasionally complain that the marked weight is not the true net weight.

This can be readily explained. Smoked hams contain approximately 45% of moisture and are bound to shrink in weight by evaporation of that moisture. Likewise, both hams and bacon are more or less fat and the coverings absorb fat, particularly during warm weather or when carried in a warm place.

This absorption naturally adds to the weight of the wrapper and reduces the net weight of the meat.

The true net weight is taken and marked on the wrapper at the time of wrapping. Billing at the marked weight follows as a natural sequence because after wrapping the net weight cannot subsequently be determined without unwrapping. Such procedure would be expensive and defeat one of the principal purposes of wrapping—sanitation.

To prevent the cut surface from becoming darkened and hardened, it is essential that the wrapping be done immediately after smoking. This company tries to regulate its stocks so that such wrapped meats will be promptly shipped. We have also installed smoke houses at a large number of our branches so that the pickled meats may be shipped to such branches and there smoked. This permits prompt marketing after wrapping.

Thus in every way possible Armour and Company seeks to carry out the spirit of the law and, as near as it is humanly possible, the net weight marked on the wrapper is the actual weight of the enclosed product.

ARMOUR AND COMPANY
CHICAGO

5532

Natural Gas

A PLEA for natural gas conservation in its utilization was made before the American Home Economics Association by Miss Olga A. Elifritz, the first woman ever allied with the Bureau of Mines. Miss Elifritz, who is a home economics woman, made her plea to the great group of women interested and working on home problems to carry the information of gas utilization and conservation to the great mass of housewives who need to know of the fast approaching end of the natural gas supply. She pointed out that West Virginia, Ohio, Pennsylvania, Kentucky, New York, Indiana, Arkansas, Louisiana, Texas, Oklahoma and California, alone produce 98 percent of the natural gas within the 23 states in the union using natural gas as a fuel.

"This is a real economic problem," said Miss Elifritz, "since there is no fuel which approaches nature made gas altogether in heating value—manufactured gas having but half the heating value—cleanliness, convenience and cost, but extreme waste and ignorance in its use have caused an acute shortage and the end of the supply is in sight. This directly affects the comfort and well-being of over 2,400,000 domestic consumers, the industrial user.

"The great home wastes of natural gas may be partially eliminated by doing away with the use of the very low set burner range with solid top, the coal stove with gas burner attachment, and creating a demand for all efficient appliances."

Resolution adopted by the association in session June 24-29, Colorado Springs:

"Whereas, there are over 24,000,000 domestic users of natural gas in the United States, and the United States government investigations have shown that the demand for natural gas during cold weather is greater than the available supply, which condition is in part due to the wasteful methods of use by domestic consumers, and,

"Whereas, the national committee on natural gas conservation—appointed last January by Secretary Lane — on which the American Home Economics Association has had a representative, has recently unanimously made, recommendations how natural gas ought to be used in the home, which recommendations if enforced, would result in more economic use and improved service.

"Therefore, be it resolved, that the American Home Economics Association endorses and approves the recommendations of the National Committee on Natural Gas Conservation pertaining to use of gas in the home, and,

"Be it further resolved, that in the interest of the best, just, reasonable, safe adequate and sufficient service of the natural gas using homes, that we ask the governors and the Utility Commissions of all of the natural gas using states to take steps to immediately carry out and put in force the recommendations of the National Committee on Natural Gas Conservation, and that the Secretary of this association be directed to transmit a copy of this resolution to the governor and to the Utilities Commission of every natural gas using state, and also release same to the public press."

Eggs Is Eggs

By W. L. DODD Assistant Director of Sanitation, Pease Laboratories

THE egg is one of our indispensable foods.

It is the food supplied by Nature for embryonic growth—the unborn. Just as milk is supplied by Nature to nourish the recently born, before they can assimilate a more complicated and extended diet, the egg is created to nurture developing life. The egg is a growth builder rather than an energizer. To this end wise Mother Nature supplies it with an abundance of growth stimulators or vitamines, but omits the energizing carbohydrate found in milk. For indeed energy, while necessary to the recently born, is not a requisite of the maturing embryo. On the other hand in the adult diet the egg is consumed together with the energizing food, for both are necessary.

The egg graces most every breakfast table either as soft boiled, in the fluffy omelet or the more plebeian issue of the frying pan. The housewife uses eggs to add nourishment and flavor to her cakes and pastry. The dyspeptic knows it as nutritious sustenance for feeble gastric fluids, the business man seeking efficiency includes it in his frugal repast, the convalescent uses it as the first stepping stone to renewed health and vigor. There are few individuals indeed who do not include the humble egg in their diet.

To supply this tremendous demand two billion dozen eggs are produced annually, enough to bury the State of Rhode Island under several layers. Few of the eggs in this enormous flood stream find their way to the city dweller's table from the immediately adjacent farm land, for the simple reason that the consumer eats more than the surrounding hens can lay. The mighty source of this vast supply is roughly included within the territory north of the Mason-Dixon line to the Great Lakes, and bounded by the Atlantic on the east, the Mississippi on the west.

The bulk of the eggs within this mammoth hennery come, not as a specialized product, except in few instances, but as a side issue of the many little farms. They are a crop to which the farmer pays scant attention, but are a source of revenue to the farmer's wife, the "egg-money" which is hers for her own choice of spending.

The main laying period is in the Spring. Fresh eggs first come into the market from Texas about the time Santa Claus is dusting down the soot in millions of juveniles' homes. Steadily the productive area moves northward and by mid-spring the lack of a supply from the heat-drooping southern hen is taken up by her more virile northern sister. With the advent of warm weather an industrial lassitude arrests the diligent hen, and by early October almost the entire striking hen forces are out. Then comes the season of scarcity until the Texas hens arbitrate with Nature and get on the job again.

Not only does the quantity of eggs fluctuate through the seasons but the quality varies as well. The best egg is the April egg. Most eggs are substantially of meritorious goodness when fresh laid in the nest. The superiority of the April egg is occasioned by the more advantageous conditions of weather prevailing at that season, influencing the productiveness of the hen and decreasing the hazards of transportation spoilage. Weather is propitious in the autumn for profitable transportation but the quantity of eggs is at low ebb. But during the chilly wintry months eggs are not infrequently frozen, or spoiled in transit by the alternate freezing and thawing. In hot summer warmth accelerates spoilage problems.

Furthermore it is perhaps generally considered that the hot weather directly affects the quality of the unlaid egg. The hen is moulting, her vitality is lessened, and it is quite likely that the germinating egg is of inferior nutritive value and probably contains more bacteria, even before laying, than the cool-weather egg.

Spoilage is associated in the minds of most individuals with age. It is a common opinion that the older the egg the more apt it is to prove objectionable when opened. As a matter of actual fact the average egg fresh-laid in the summer is often of inferior quality to the several months' older spring-laid egg, which has been kept clean and cool. Environment is the vital factor, more so than mere age. The fresh egg addling in the rain, wet outdoor nest, or exposed to the hot sun's rays of a freight platform, or a sultry room of the wholesaler, or the muggy warmth of the grocer's window, may be far less "fresh" than the more patriarchal egg which has been promptly stored in a dry, clean, sweet-smelling, cool atmosphere.

A certain proportion of fresh eggs come direct from hen to table through the media of public markets; solicitation at the housewife's door by farmers, and parcel post or express shipments. The latter method appears on the face of it a quite satisfactory means for supplying the table with fresh eggs, but in reality has many hampering restrictions. For one, the farmer cannot supply fresh eggs the year round; the method of distribution is expensive for small orders; spoilage may result from inadequate packing or uncertain arrival, and the consumer must purchase the eggs "as-is," sight unseen.

Probably the greater bulk of fresh eggs may reach the consumer by a semi-direct route, one of increasing importance being from the farm to creamery, and hence to the consumer by the morning milkman. The majority of the specialized henneries, on the other hand, sell direct to a wholesaler, and hence to the retailer and consumer.

The fresh, full flavor of a recently laid egg as it reaches the consumer depends on its protection from moisture, heat, and strong smells.

Wet or dampen an egg and you expose the porous shell to two spoilage causes—the absorption of smells and the entrance of bacteria. The development of mould growth is also favored. This is a grave defect, for the resulting mouldy egg when broken may appear normal to the housewife yet be of such a strong musty flavor as to ruin the omelette and the other fresh flavored eggs into which it is broken.

Heat, if high and prolonged, causes deterioration either through the germination of the contained chicken embryo, or spoilage may result from quickening bacterial life.

Absorption of odors, while proceeding with the normal egg to some extent, is hastened with the egg which has been wet or dampened.

The limiting of spoilage problems due to the more rapid and direct marketing methods for fresh eggs, unquestionably is an impor-

tant reason for their enhanced popularity and reputation.

Stored eggs lack this advantage. The path from farm to city is more devious and prolonged. On the farm eggs are kept until there is sufficient accumulation to make it worth while to trade them in at the cross-roads store. The country merchant accepts them regardless of quality, in exchange for merchandise. The transaction may even net him no profit; it is often but a lure to draw trade. The eggs remain in the store until enough are gathered to ship the country buyer by local freight. During these garnering periods considerable time may elapse from the laying of the egg in the nest to its receipt by the country buyer. The eggs may have been properly protected, during the period, from spoilage—more likely they have not. Only the personal instinct of cleanliness on the part of the farmer or country storekeeper would occasion their careful handling, for no attempt is made to purchase or sell them on a basis of quality. Not an egg is candled to separate out the unfit, and the devices for shielding the eggs from moisture, cold, heat, or strong smells, are makeshift at the best. Up to the time they reach the country buyer, eggs are merchandised entirely on the principle that "eggs is eggs."

The country buyer may or may not candle the eggs. However, he repacks them into new cases, rejecting the obviously unfit and sends them in carload lots to the city wholesaler.

At the wholesaler's warehouse the eggs are candled, sorted, and graded, then pass into cold storage and hence to the retailer and consumer.

Quality is the important factor for eggs entering storage. The most consequential — perhaps the only—storage problem is the prevention of odor absorption, the so-called cold storage flavor commonly ascribed to the strawboard filler surrounding the eggs. The storage temperature is easily controlled. Eggs which enter in good quality keep perfectly. An egg laid in April should arrive for cold storage in as good shape as the egg laid in July. As a matter of actuality due to the present haphazard handling in the country, the eggs laid in the cool spring months are the best eggs. An egg stored in April would in six months be far superior to the summer-laid egg stored a much shorter period. The fortunate consumer is the one who purchases the April stored egg rather than the summer egg of briefer storage. Yet there is little reason why the summer egg should not have the same good qualities and fresh flavor of the spring-laid egg. It is simply a question of adequate and prompt storage in the country, all the way from the farm to the city wholesaler.

The consumer's prejudice against cold storage eggs arises from her former experiences before advent of the modern refrigeration methods. The habit of city grocers in selling any poor eggs they had in stock under the designation of "cold storage" has also been a contributing cause. Ofttimes the grocer's lackadaisical handling—by the kerosene can, or the box of onions, around the steam pipe or stove, in the sunny window, on the moist, poorly drained ice box floor—has quickly ruined eggs of original good quality.

However, if we did not have the erroneously disapproved cold storage egg, this healthy food in time of scarcity would soon soar in price to unprecedented heights. The cold storage egg is a necessity. During the fall and winter far more eggs are eaten than the hens lay. Modern cold storage with its adequate refrigeration equalizes the egg supply over the seasonal variations in quantity. It is thus an important adjunct in the ever-increasing demand to lower present living costs.

But there is a serious criticism of the stored egg. It is a deplorable fact that in the long route from the hen's nest to the consumer's table there is but one person acquainted with the egg's interior—the wholesaler. The farmer, the country storekeeper, ofttimes the country buyer, have no incentive for such interest. The city grocer gets the quality for which he pays, but frequently handles his eggs unwittingly. The consumer determines quality by the price asked and in this she is correct if the grocer has kept them properly. When the eggs have been carefully maintained she gets her worth. Otherwise she may very well pay a fancy figure for eggs poorer in quality than those of lower price. It is all a gamble for her. She is the innocent victim of "eggs is eggs."

Coffee stocks at Rio and Santos are said to be less than half of what they were a year ago, those at Rio being only slightly more than 300,000 bags. Large European shipments are responsible for the large shrinkage of stocks which is giving a firm tone to Brazilian markets.

Potential Energy in Food

The potential energy contained in any substance is determined by ascertaining the amount of heat that is produced by its complete combustion. The potential energy contained in any substance is expressed in calories. By a calorie is meant the amount of heat required to warm one gram of water one degree centigrade. The amount of heat given off by the human body per day is equal to the heat required to warm 2,500,000 grams, or 2,500 kilograms, of water one degree centigrate, and this amount of heat is generated by the body each day from food ingested. Different kinds of food have different values as fuel.

The food is utilized in the body for the following different purposes: To form the tissues and fluids of the body; to repair the waste in the tissues; it is stored up in the body for future consumption; it is consumed as fuel, its potential energy being transformed into heat, muscular or other forms of energy; or, in being consumed, it protects the tissues and other food from consumption.

The protein nutrients form tissue, and also serve as fuel; the fats form fatty tissue and also serve as fuel; the carbohydrates are transformed into fat and serve as fuel.

Less Sugar in Jellies and Jams

One-fifth to one-quarter less sugar can be used in making jelly and jams, experiments made by household experts in the United States Department of Agriculture experimental kitchen indicate.

Another sugar-saving w r i n k l e tested by the experiment kitchen is to add one-quarter teaspoon of salt to each cup of fruit juice for jelly or pulp for jam, marmalade, and conserve. In the case of nonacid fruit this makes the absence of the full amount of sugar less noticeable. The salty taste will disappear after the product has stood for a few weeks, but the flavor will be much the richer for the addition of the salt. Salt was so used in England during the war, and the method suggested was based on reports of the process.

With fruits of pronounced flavor, or where lemon and orange peel or spices are used for flavoring those with mild flavor, various sirups take the place of part of the granulated sugar. Usually half and half is the proportion used in substitution.

United States Grades for Potatoes

Recommended by the United States Department of Agriculture

U. S. Department of Agriculture

Department Circular 96, May, 1920.

This circular supersedes Markets Document No. 7, "U. S. Grade Fancy" is added and Grades No. 1 and No. 2 are revised.

Standard grades for potatoes were recommended by the United States Department of Agriculture and the United States Food Administration on September 10, 1917. The specifications were determined by thorough investigations conducted by the Bureau of Markets of the United States Department of Agriculture.

In order to reduce waste and conserve transportation facilities during the war emergency the Food Administration issued a rule, effective January 31, 1918, requiring the use of the United States potato grades by licensed dealers. The results obtained were so satisfactory that when this regulation was canceled on December 10, 1918, the use of the grades, to a large extent, was continued voluntarily. The universal use of the standards during the war emergency afforded the investigators of the Bureau of Markets an excellent opportunity to study in detail the various specifications, and determine whether any changes were desirable. As a result, a few changes were recommended on February 10, 1919.

Because of the large, bright, smooth potatoes grown in some regions, especially in sections of the Western States, those interested demanded a grade with higher requirements than those of U. S. Grade No. 1, in order to provide for stock of high quality, which is sold to a special class of trade. To meet this demand, the U. S. Grade Fancy now is recommended, in addition to U. S. Grade No. 1 and U. S. Grade No. 2.

This recommendation does not mean that all crops of potatoes should be sorted into three grades. A large percentage of the commercial crop in most of the potato producing sections of the country should meet the requirements of U. S. Grade No. 1, and this grade will provide for most of the trade demands. Potatoes of better than average quality can be carefully graded and sold as U. S. Grade Fancy, while smaller potatoes, or those of inferior quality, can be marketed as U. S. Grade No. 2. It is probable that many of the commercial potato-producing sections will have little use for the U. S. Grade Fancy.

Observations made in the producing sections show that there is a tendency to regard sizing as the only essential to proper grading. It should be emphasized that, in addition to proper sizing by hand or machine, the defective stock, when present, must be removed in order to meet grade requirements.

U. S. Grade Fancy

This grade shall consist of sound potatoes of one variety which are mature, bright, smooth, well shaped, free from dirt or other foreign matter, frost injury, sunburn, second growth, growth cracks, cuts, scab, blight, soft rot, dry rot, and damage caused by disease, insects, or by mechanical or other means. The range in size shall be stated in terms of minimum, and maximum diameter or weight following the grade name, but in no case shall the diameter be less than two inches. (Such statements as the following will be considered as meeting this requirement: "U. S. Grade Fancy, 2 to 3½ inches;" "U. S. Grade Fancy, 10 to 16 oz.;" "U. S. Grade Fancy, 2 inches and larger;" "U. S. Grade Fancy, 10 oz. and larger.")

In order to allow for variations incident to commercial grading and handling five per centum by weight of any lot may vary from the range in size stated, and in addition, three per centum by weight of any such lot may be below the remaining requirements of this grade, but not more than one-third of such three per centum, that is to say, not more than one per centum by weight of the entire lot, may have the flesh injured by soft rot.

U. S. Grade No. 1

This grade shall consist of sound potatoes of similar varietal characteristics which are practically free from dirt or other foreign matter, frost injury, sunburn, second growth, growth cracks, cuts, scab, blight, soft rot, dry rot, and damage caused by disease, insects, or mechanical or other means.

The diameter of the potatoes of the round varieties shall not be less than one and seven-eighths inches, and of potatoes of long varieties one and three-fourths inches.

In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size, and, in addition, six per centum by weight of any such lot may be below the remaining requirements of this grade; but not more than one-third of such six per centum, that is to say, not more than two per centum by weight of the entire lot, may have the flesh injured by soft rot.

U. S. Grade No. 2

This grade shall consist of potatoes of similar varietal characteristics which are practically free from frost injury and soft rot and which are free from serious damage caused by sunburn, cuts, scab, blight, dry rot, or other diseases, insects, or mechanical or other means.

The diameter of potatoes of this grade shall not be less than one and one-half inches.

In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size, and, in addition, six per centum by weight of any such lot may be below the remaining requirements of this grade; but not more than one-third of such six per centum, that is to say, not more than two per centum by weight of the entire lot, may have the flesh injured by soft rot.

Definition of Grade Terms

As used in these grades:

"Mature" means that the outer skin (epidermis) does not loosen or "feather" readily during the ordinary methods of handling.

"Bright" means free from dirt or other foreign matter, damage or discoloration from any cause, to an extent such that the outer skin (spidermis) has the attractive color normal for the variety.

"Smooth" means free from second-growth, growth cracks, and other abnormally rough surfaces.

"Well shaped" means the normal, typical shape for the variety in the district where grown, and free from pointed, dumb-bell shaped, excessively elongated, and other ill-formed potatoes.

"Free" means that neither the appearance nor the physical structure has been appreciably damaged by the causes mentioned.

"Diameter" means the greatest dimension at right angles to the longitudinal axis.

"Soft rot" means a soft mushy

(Continued on page 41)

Pepper

BLACK PEPPER is the dried unripe fruit of Piper nigrum. White Pepper is the same product with the outer shell removed.

The Pepperwort family is confined generally to hot low places, valleys and banks of rivers, in various sections in the regions of the Equator. It is not the extreme heat of these regions that produces good pepper, but the best pepper is produced in the valleys where the annual mean temperature does not exceed 70 degrees Fahrenheit.

Black pepper is a climbing plant and attains a height from 8 to 12 feet, but does not develop fully and bear properly until about the third or fourth year. The berries are gathered by hand for commercial use before they mature, and are dried in the sun, which changes the berry to a black or reddish black dried seed, with a shriveled coating.

Black pepper imported into this country comes from the Malay Peninsula, the Island of Sumatra, the Island of Java, from Southern India, French Indo-China and Siam. The various kinds of pepper imported from these sections are known commercially as Singapore, Johore black pepper, Acheen, commonly known as Penang black pepper, Lampong Java, Trang, Telicherry, Aleppey, Mangalore, Saigon, Siam and Shot pepper. The latter is the heavy berries taken from Singapore black pepper.

The difference in the varieties is easily seen when samples of all are at hand, but when each pepper berry is by itself it takes the eye of an experienced judge to distinguish and identify each pepper corn. If the samples were all mixed it would be hard even for the expert to classify the various pepper seeds.

The flavor and pungency of pepper is due to a volatile oil and an alkaloid called piperin. The non-volatile ether extract mentioned in the standard is composed largely of piperin, and the proportion of nitrogen required is to determine if the piperin is normal in quantity.

Pepper has been adulterated for centuries and as most pepper is usually sold powdered it has been an easy matter to add foreign ingredients which could not be detected by the average user. Materials that have been used to adulterate pepper are linsced meal, rice, pepper leaves, mustard, wheatflower, sago, woody fibre, chillies, grapeseed, potatoes, chicory, olive stones and exhausted pepper shells.

The standards of purity for food products, United States Department of Agriculture, Circular 136, gives the following requirements for pepper: 41. Black pepper is the dried immature berry of Piper nigrum L. It contains not less than six and seventy-five hundredths per cent (6.75%) of non-volatile ether extract, not less than thirty per cent (30%) of starch, nor more than six per cent (6%) of total ash, nor more than one and five-tenths per cent (1.5%) of ash insoluble in hydrochloric acid.

The methods for detection of adulteration have been carefully standardized and the food manufacturer with a reputation will absolutely take no chances on the adulteration of pepper. Here and there are spice grinders who will adulterate, but the ever-watchful eye of the Department of Chemistry of the United States and the various States will sooner or later detect the adulteration. Olive stones and pepper shells are the principal adulterants now used and recent decisions mostly named pepper shells. On a whole, we are buying pure pepper in this country. The housewife has learned to buy the brands of reputable manufacturers and thereby obtains a pure product. There was a time when we had no food law in the United States and pepper corns were made artificially from oil cakes, common clay, pepper dust and bran. This practice is, of course, now history.

The 1920 Red Book

The 1920 edition of the Orrin Thacker Directory of Wholesale Grocers, Semi-jobbers, Chain Stores, etc., has recently been published. This directory—familiarly known as "THE RED BOOK," is now in its 26th annual edition.

In this edition are more than 5700 names, 4370 being exclusively wholesale grocers in the United States and Canada, and 1403 names of semi-jobbers, chain stores, etc.

Population of states and cities is given, and the county in which each city is located is also designated.

A tabulation in the RED BOOK shows the number of names listed in each state.

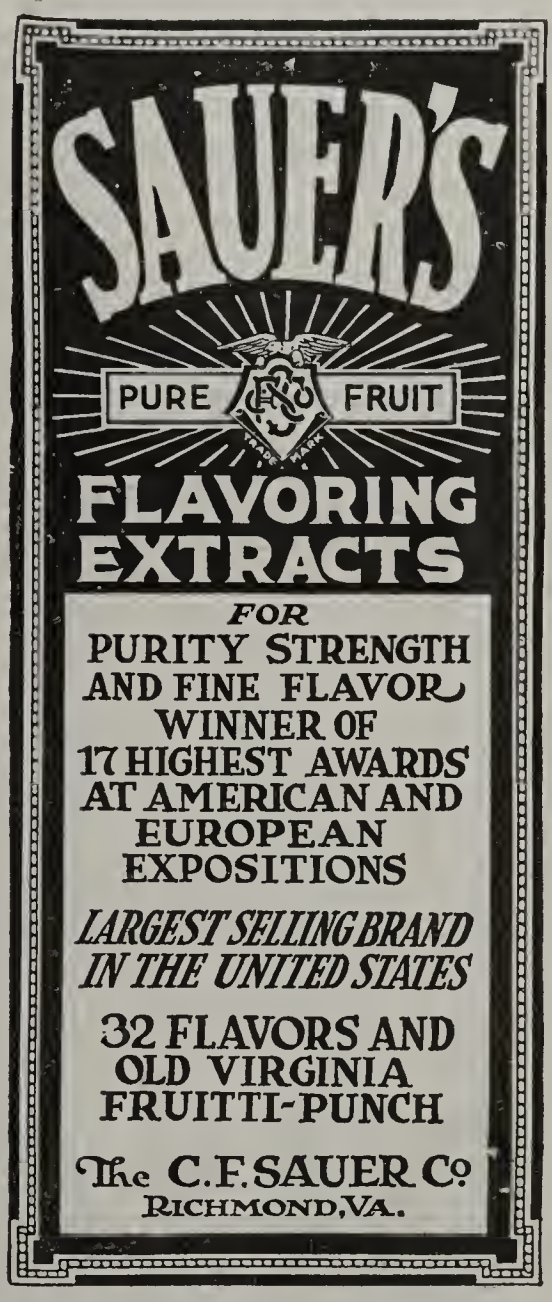
This directory is said to be used to marked advantage by advertising managers, sales managers, salesmen and credit men.

The RED BOOK is published by the Orrin Thacker Directory, 33 West Gay Street, Columbus, Ohio. The price is $2.00 per copy, postpaid.

"There are two sides to every question," remarked the ready-made philosopher.

"There's two sides to a hickory nut," rejoined Farmer Corntassel, "an outside and an inside, but only one of 'em is worth payin' any attention to."—*Washington Star.*

Scientists have discovered that a snail can travel a mile in seven days—thus beating the average parcel post package by about a day and a half.



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New Book Ready

The Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, revised to November 1, 1919, will be ready for distribution during the month of August. These methods supersede those given in Bureau of Chemistry Bulletin 107, Revised, and the 1916 revision of methods published in Volumes I and II of the JOURNAL OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. The book will consist of approximately 400 pages, size of page 6x9 inches, will be printed on a high quality rag paper and will be bound in library buckram. Price: North America and U. S. Possessions $5.00 net, postpaid; all other countries, $5.50 (28s) net, postpaid.

The thirty chapters of the book will be divided as follows: fertilizers; inorganic plant constituents; waters, tanning materials; leathers; insecticides and fungicides; foods and feeding stuffs; saccharine products, food preservatives, coloring matters in foods, metals in foods, fruits and fruit products; canned vegetables; cereal foods; wines; distilled liquors; beers; vinegars; flavoring extracts; meat and meat products; dairy products; fats and oils; spices and other condiments; cacao products; coffees, tea; baking powder and their ingredients; drugs; soils; reference tables.

The Almond

The almond is one of the most ancient of human foods. Its use is referred to in Genesis 43:11, where we are told that Jacob commissioned his sons to carry a present down to Egypt to their unrecognized brother Joseph. The present consisted, among other things, of honey, myrrh and almonds.

The almond has been cultivated for thousands of years in the Orient and for some hundreds of years it has grown in a desultory way in some parts of Europe; but it is only within the last few years that this choicest of Nature's tree products has attained perfection through cultivation in that garden spot of the world—California.

Assisted by agents of the Department of Agriculture, the nut growers of California have overcome various obstacles which they have found opposing their industry, some of which seemed almost insurmountable, and are now every year producing an increased quantity of the finest almonds in the world. Last year the crop yield was fully twice that of the year before.

The enterprising spirit which is now manifested by almond growers will no doubt continue to increase the size of the annual crop until the almond comes to be one of the recognized food staples of the country. —Good Health.

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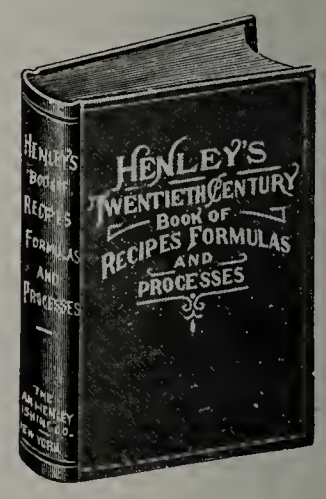

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ANIMAL FATS

(Continued from page 10)

exceed the body temperature, which is 93 and preferably should be several degrees below that, namely 80 or 85 degrees. With these two things correct, namely flavor and melting point, the Oleomargarine manufacturer need not pay so much attention to the physical condition of the oil.

Perhaps no other product of the packing industry requires more careful attention and skillful operation in the manufacture, as does Oleo oil, from the time of the selection of the fats, until the finished product is remelted in the Oleomargarine factory for blending with other Oleo oils.

The sciences of Chemistry, Bacteriology and Mechanical Engineering, together with a practical working knowledge of the business, have combined to turn out a high grade product, such as is demanded by the Oleomargarine manufacturers of today. Every American relishes a nice juicy beefsteak, and likes the delicious fat with the lean. Oleo is nothing more than the refined oil from this fat, with the fibre removed. It is one of the safest foods, as well as one of the most economical foods. This is the product which forms the base of nearly every Oleomargarine formula, where high grade Oleomargarine is manufactured. The American people are gradually absorbing these facts. Is it any wonder, therefore, that each year sees increased sales of this highly important food product?

Crop Conditions Promise More Sugar for Next Fall

People who have soft-pedaled the sugar bowl for six years may be interested in the statement that crop conditions on July 1 promise an increase in next fall's sugar production in the United States; an increase amounting to, approximately, 333,000 tons, or enough to load a train of freight cars 70 or 75 miles long, allowing 40 tons per car. This prospective crop is equal to more than 22 pounds of sugar for every man, woman, and child within the United States, and the increase over last year equals more than six pounds per person. The sugar-beet crop this year covers almost a million acres as against the 5-year average of about two-thirds of a million; and the growing condition on July 1 was above the 10-year average. There is more than half a million acres of sugar cane this year, about half of which is intended for sugar and the other half for sirup, after deducting considerable amounts for planting the next crop. There is a substantial increase in acreage over last year, especially in Louisiana, where nearly all the cane sugar of the United States is made. The growing condition of the cane in Louisiana is much better than last year but considerably under the average for the past nine years. The Department of Agriculture, which has carried on a number of projects looking toward making this country self-sustaining from a sugar standpoint, is co-operating with other agencies in protecting the crops from insects and disease and otherwise promoting the production and utilization of a bumper sugar crop. It should be borne in mind, however, that the forecast for 1920 is based upon conditions on July 1, and the actual outturn would be above or below this forecast according as condition between July 1 and harvest are better or worse than average.

If You Are Interested in Restaurants

whether public or industrial or institutional, by all means subscribe to THE AMERICAN RESTAURANT, a magazine for eating places.

Every type of restaurant is covered by articles written from actual experience.

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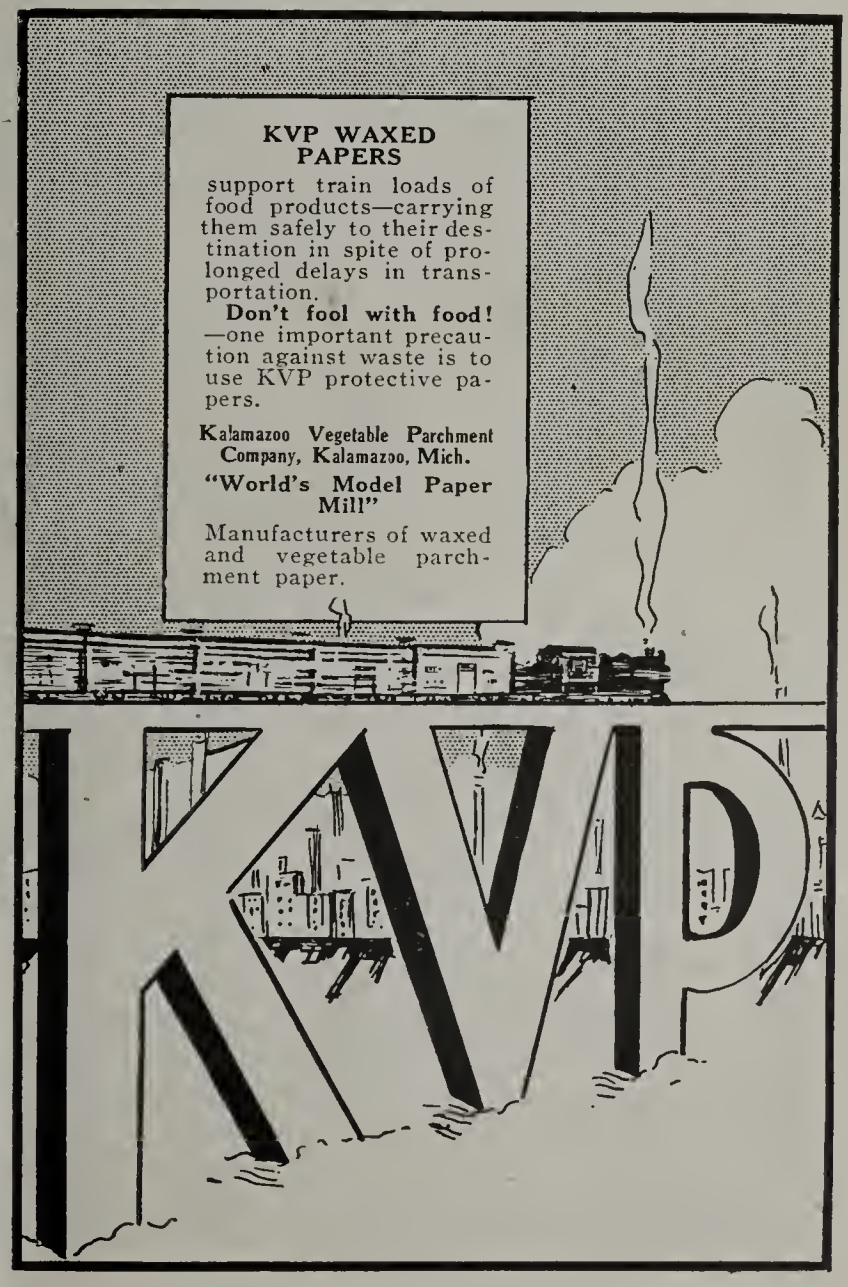

Label Quantity of Fruits and Vegetables

Food Law Provides for Statement of Amount of Contents on Packages Under Its Jurisdiction

FRUITS and vegetables in package form when shipped into interstate commerce should bear a plain and conspicuous statement of the quantity of the contents in each package, according to a statement made by officials of the Bureau of Chemistry, United States Department of Agrieulture, who are charged with the enforcement of the Federal Food and Drugs Act. Instructions have been issued showing how various fruits and vegetables in different styles of paekages may be marked in order to comply fully with the net weight amendment to the law, and also showing what shipments of vegetables as ordinarily marketed are exempt from the net weight provisions. These instructions have been distributed widely among fruit and vegetable growers and shippers.

The bulk of the fruits and vegetables now shipped into interstate commerce are marked in aecordance with the law, say officials, but some shippers have overlooked or are disregarding this provision of the law. Since this amendment has been in effect for six years and every opportunity has been given to the trade to get in line with its provisions it is the opinion of the officials that there is now no exeuse for any shipper failing to mark the quantity of the contents on packages of fruits and vegetables shipped within the jurisdiction of the law.

Fruits and vegetables in baskets, hampers, drums, cartons, boxes, erates, and barrels may in general be marked by either weight or dry measure, or when packed in barrels may be marked in terms of the United States standard barrel and its subdivisions of third, half, or three-quarters. Statements of dry measures should be in terms of the United States standard bushel and its customary subdivisions of half-bushel, pecks, quarts, pints, or half-pints. If the quantity of the contents be stated by weight or measure, it should be marked in terms of the largest unit eontained in the package, except that in the case of an artiele with respect to which there exists a definite trade custom for marking the quantity of the article in terms of fractional parts of larger units, it may be so marked in aecordance with the custom. For example, if the paekage contains a pound, or pounds, and a fraction of a pound, the contents should be expressed in terms of pounds and fraetions thereof, or of pounds and ounees and not merely in ounees, unless there is a definite trade custom to the contrary.

Crates or "flats" containing small open containers of apricots, berries, currants, cherries, grapes, peaches, plums, prunes, peppers, tomatoes, and the like, should be marked on the outside of the crate or "flat" with the number of small containers and the quantity of the contents of eaeh. When the crates are so marked it is not neeessary to mark the quantity of contents on the small open containers within the crates, but if the quantity of contents is marked on the small open containers the marking must be correct.

It is not necessary for the present and until further notice to mark the quantity of contents on the following fruits and vegetables when marketed in the manner indicated: asparagus in boxes and cases; beets with tops, bunched, in drums and hampers; cabbages in crates; cantaloupes and casabas in crates and baskets; carrots with tops, bunehed, in drums and hampers; cauliflower in crates and hampers; celery in boxes and crates; eggplant commonly wrapped in paper and packed in crates; kale in barrels, baskets, and hampers; lettuce in barrels, drums, baskets, and hampers; onions, with tops, bunched, in drums and hampers; pineapples in crates; radishes, bunched, in drums and hampers; romaine in hampers; spinach in barrels, baskets, and hampers; turnips with tops in drum and hampers.

Federal inspectors have been instructed to examine interstate shipments of fruits and vegetables to see that the quantity of contents is marked in accordance with the law. Copies of Item 253 on the "Labeling of Various Packages of Fruits and Vegetables with the Quantity of the Contents" will be sent free upon application to the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

State of New York Department of Farms and Markets Division of Agriculture

ONE of the exhibits at the New York State Fair, September 13th to 18th, whieh is expeeted to attract much attention will be a mammoth cheese weighing a little less than six tons. This cheese, with others manufaetured for the exhibit, are intended to be representative of the cheese manufacturing industry of the State.

The cheese exhibited at the State Fair last year weighed about 6,500 pounds and was made at Lowville by Horace Rees, one of the Division of Agriculture cheese instructors. Commissioner Hogue will supervise the making of the cheese this year, although the work will be in charge of Mr. Rees. For its manufacture, 120,000 pounds of milk will be required. It will be 8 ft. 6 inches in diameter and 6 ft. 6 inches in height. Commissioner Hogue announeed that he would invite the members of the State Fair Commission to go to Lowville when the cheese is made and view the various operations.

President William E. Dana, of the Council of Farms and Markets, will introduce Lieutenant-Governor Harry C. Walker on the opening day of the fair, September 13th, and Lieutenant-Governor Walker will cut a pound of the cheese, or as close to a pound as he is able, after which the cheese will be sold in pound packages. In other years, the cheese has not been cut until the third or fourth day of the fair, but since this year the State Fair Commission and Syracuse business men are working hard for an attendance of 100,000 on the opening day, Commissioner Hogue decided to have the eheese-cutting ceremony on that day.

On aecount of its size, it will be necessary to transport the dainty morsel by motor truck from Lowville to Syraeuse. It is so large that it cannot be placed in a freight car, and of course could not be carried on a flat car.

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Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

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Improvement in Sirup Manufacture

By C. F. WALTON, Jr.

IMPROVEMENT in sirup manufacture means to the sirup maker the development of efficient and economical methods of improving the keeping quality, flavor, and general appearance of his product. The Bureau of Chemistry of the Department of Agriculture has been engaged for some time in studies of sirup manufacture and the results of all work done to date will soon be published. The work which has already been completed by the Bureau was done by Dr. J. K. Dale under the immediate supervision of Dr. C. S. Hudson. Both Dr. Hudson and Dr. Dale have resigned from the Bureau.

It is well known how much trouble has been caused by the fermentation of sirup in barrels. This trouble can be prevented, or greatly minimized, in three ways. The first and most obvious remedy is that of canning under conditions to insure sterilization. Pure cane sirup may be canned alone or together with some other sirup to form a blend. Since canning sirup and molasses enables the manufacturer to market his product in a satisfactory keeping condition, it is obvious what an important part this enterprise plays in the industry. The work which the Bureau of Chemistry has done along this line has been confined to a study of co-operative or community canning plants, which are desirable in those localities where the sirup makers wish to market pure cane sirup under their own label.

The second means of making possible good keeping quality is that of partial inversion of the sucrose. When boiled too thick, a pure cane sirup sugars because there is too much sucrose present to stay in solution after the sirup has cooled. Partial inversion consists in changing over some of the sucrose molecules to invert sugar, when the resulting sirup may be boiled very thick without danger of sugaring. When boiled sufficiently thick, loss from fermentation is greatly minimized. A large part of the Bureau's work on sirups has consisted in the development of the invertase method of securing partial inversion. Unfortunately, however, invertase is an enzyme obtained most cheaply by the autolysis of brewers' yeast, and, with prohibition, a sufficiently inexpensive source for invertase may not be easy to find.

The third method of preventing crystallization and fermentation in cane sirup consists in actually removing a part of the sucrose, as in ordinary sugar-house practice. This method is of value only in large plants equipped to make sugar. The resulting first molasses may be boiled very thick without danger of sugaring. When sugar is comparatively cheap, and a high quality first molasses sells for the right price, many of the sugar-houses in Louisiana may find it more profitable to remove a relatively small percentage of sugar and specialize in a good quality molasses of uniform grade.

Fully as important as the problem of keeping quality is the consideration of improved methods of clarification and decolorization as a means of improving flavor, color and general appearance. The characteristic sulphur taste of sirup and molasses made by the sulphur-lime process has only a limited acceptability. But if the sulphur-lime process needs to be either improved or displaced, so also does the old-fashioned and wasteful process of skimming. With this end in view, Dr. J. K. Dale investigated the use of various filtering media as a means of securing clarification in the invertase method of sirup making. He found that by the addition of a certain variety of Kieselguhr, or diatomaceous earth, to the raw juice, and subsequent filtration, he obtained an exceptionally efficient clarification without the necessity of skimming or the use of sulphur and lime. The use of Kieselguhr together with some active decolorizing carbon now promises to largely displace the sulphur-lime process in sirup manufacture. Decolorizing carbon possesses the additional advantage of removing strong and objectionable flavors.

The Bureau of Chemistry is planning to continue its co-operation with the manufacturers, in order to work out fully the details of a method for making sirup and molasses of improved quality—products which should be in growing demand in Northern markets. It will then be possible to design and recommend factories neither too large nor too small to be efficiently operated in any of the cane producing states.

How Food Inspection Helps Business

If a New York apple grower ships his finest fruit to Pennsylvania and later receives a report that it has arrived in poor condition he either accuses the receiver of dishonesty, or lays the blame to the railroad. An argument ensues; time and money are lost.

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An increasing number of shippers and buyers are protecting themselves by the use of this service. Only recently an exporter stated that because of having a Government inspection of his export produce his business had grown considerably, for his clients in foreign markets now have prima facie evidence attesting the condition of the fruit before it is loaded on the boat, and are literally deluging him with orders.

The Food Products Inspection Service rendered by the Bureau of Markets, United States Department of Agriculture, is of inestimable value in facilitating the distribution of the products covered, in hastening the release of cars, in forestalling deterioration and waste on account of delays resulting from disputes as to the condition of fruits and vegetables, and in preventing questionable trade practices.

Full information can be had regarding the service by writing the Bureau of Markets, United States Department of Agriculture, Washington, D. C.

A TREE OF RIPE APPLES

(Continued from page 18)

to break down prejudice, silence doubting Thomases, and prove the idea a practical one when carried out sensibly from a business standpoint. They have nursed the apple tree, watered its roots with common sense, let in the sunshine of honest, efficient, community service, and the warm winds of public approval have helped ripen the harvest. Who is ready to reap?

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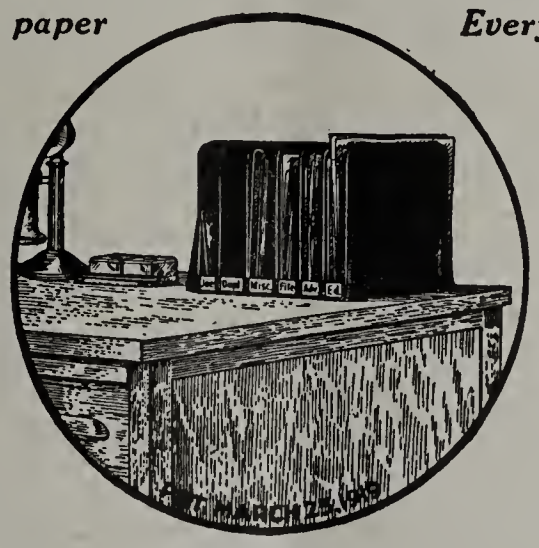

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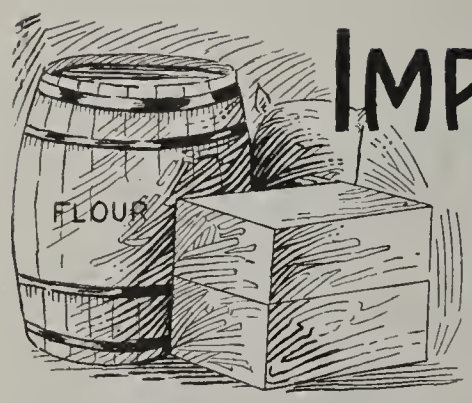

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MUSHROOMS

(*Continued from page 26*)

of mushrooms, the qualities of tenderness and flavor are most important; to the customer, who purchases by the pound, the matter of weight is of almost equal importance, one not to be *lightly* ignored.

The price last Summer, it may be remembered, ranged from $1.25 to $1.75 a pound. With everything more costly this year, the average price no doubt will be higher, although at present the owners of the plantation are filling orders only on contract, contracting for one year at $1.00 per pound, on stated quantities to be delivered each day of the week. As an example of successful mushroom cultivation on a large scale, the plant is well worth a visit, for it is an interesting development, one as yet rare in this country.—*New York Hotel Review.*

GRADES OF POTATOES

(*Continued from page 32*)

condition of the tissues from whatever cause.

"Practically free" means that the appearance shall not be injured to an extent readily apparent upon casual examination of the lot, and that any damage from the causes mentioned can be removed by the ordinary process of paring without appreciable increase in waste over that which would occur if the potato were perfect. Loss of outer skin (epidermis) only shall not be considered as an injury to the appearance.

"Free from serious damage" means that any damage from the causes mentioned can be removed by the ordinary processes of paring without increase in waste of more than ten per centum by weight over that which would occur if the potato were perfect."

According to a statement of C. Thorpe, general manager of the California Walnut Growers Association, the normal consumption of walnuts in the United States is now around 70,000,000 pounds annually and is increasing rapidly. The consumption for the period October, 1917, to October, 1918, amounted to about 74,000,000 pounds. From government statistics the average annual import of walnuts (unshelled and shelled) for the last ten years is 30,924,712 pounds. The average annual California crop for the same period is 25,375,000 pounds.

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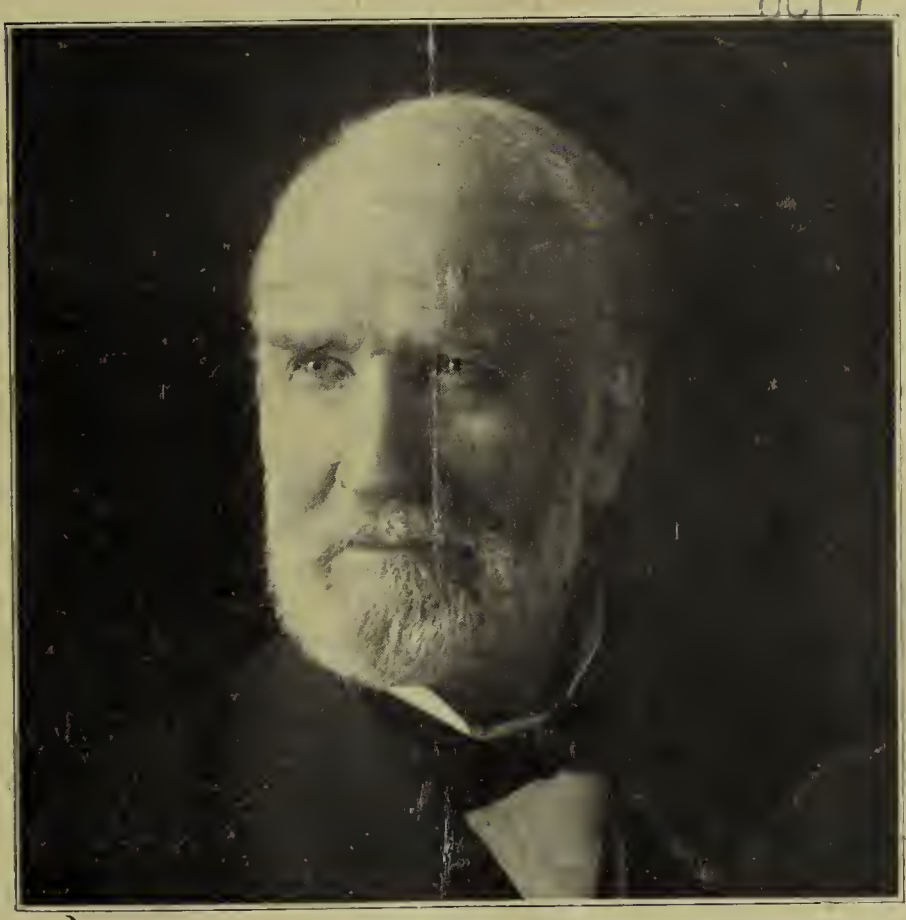

JAMES WILSON
Secretary of Agriculture

SEPTEMBER, 1920

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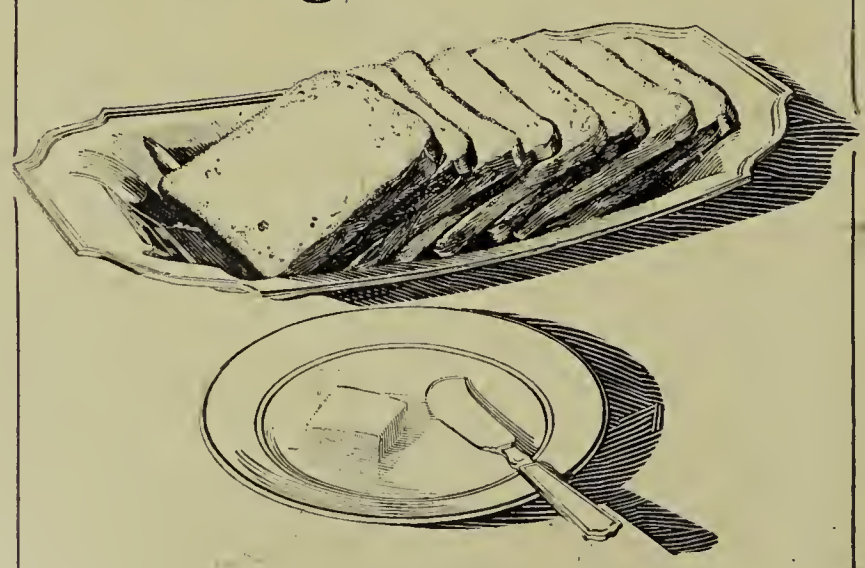

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THE AMERICAN FOOD JOURNAL

The National Magazine of the Food Trade

Vol. XV SEPTEMBER, 1920 No. 9

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Vegetable Oils.*

By DR. DAVID WESSON, Manager Technical Dept, Southern Cotton Oil Co., New York, N. Y.

YOU have all heard of the donkey who was placed between two bundles of hay, and died of starvation before he could decide which one to take. Now, if you can imagine that same donkey between the bundles of hay, one on each side and another one in front and another behind, you can imagine how much worse a quandary he would be in and the greater difficulty in making his choice.

While I would not wish to be compared to the above mentioned classic animal, I cannot but help feeling some sympathy for him because your Secretary has asked me to speak on the subject of "Vegeable Oils."

In the first place, there is an infinite variety and number of them and their histories are, most of them, interesting.

Secondly, considered from a chemical standpoint alone, enough could be written, in fact, has been written, to fill up Dr. Elliott's famous six-foot book shelf, and then some.

Thirdly, there is a great deal to be said from the dietic standpoint, in which we are all interested.

Fourthly, there are the problems connected with the use of various oils in Margarin.

Fifthly, the statistical position of the various oils, and

Sixthly, the ever-arising question of the laws under which we are compelled to operate.

Anyone of these headings would be a-plenty in the way of a subject, and as your Secretary has not answered my letter asking how much time I would be allowed to speak, I am going to assume that you will be all more or less interested in the several phases of the subject and make my talk accordingly.

*Address to the Institute of Independent Margarin Manufacturers, at its First Annual Convention, Chicago, August 6-7, 1920.

Early Use of Vegetable Oils

Vegetable Oils were used in some form or other in the earliest times. They were used chiefly for food and filling lamps, candles being unknown. The oil mentioned in the Bible was almost invariably Olive Oil. The Greeks were the first Europeans to use oil and they learned how from the Egyptians.

In the first century of the Christian Era from the writings of Dioscoridies and Pliny the Elder, we learn that the Greeks and Romans were familiar with Castor Oil, Almond Oil and Walnut Oil. In the main, however, until the middle of the last century, Olive Oil was the chief vegetable oil in use for edible and other purposes, and it has been only during the very recent past that it has had to take its proper place with the very many other vegetable oils with which it has to contest its supremacy.

There are several causes, of course. The principal ones are:

First, the constantly increasing demands for edible oils, which could not be met by the fruit of the olive tree; the second, the work of the chemist and chemical engineer, who have opened up new sources of edible oils by making almost all vegetable oils edible. In other words, demand usually stimulates the supply, but in this case, if it had not been for the chemist, the supply would not have been forthcoming.

years ago, so have plenty of mate-

I first commenced working on vegetable oils something like thirty rial for a historical address which might be interesting, were there not other more important matters to talk about.

Oil Chemistry

For many years the chemistry of the several oils has been considered a comparatively simple matter. We were taught that the chief difference between fats and oils, for instance, was largely a question of temperature, all fats being oils as above 150° Fahrenheit. The books also told us that fats and oils were simple combinations of bodies called fatty acids with glycerin. The fluid fatty acids were mostly Oleic, Linoleic, Linolenic, while the solid fatty acids were Stearic, Palmitic, Margaric, Lauric, Myristic, etc.

Now it was quite common to talk of Glycerin when combined with Oleic acid as Olein, or with Linoleic acid as Linolein, or with Palmitic acid as Palmatin, or with Stearic acid as Stearin. The whole subject was beautifully simple, and easy to talk about till one of those practical chemists who likes to take the joy out of life announced that one glycerin could be combined at the same time with one, two, or three different fatty acids, so as to form what are known as Mixed Glycerides, in distinction to the simple ones first mentioned. This makes it necessary to talk about such bodies as dioleo-

Palmitin or oleo di palmatin, etc. This would not be so bad if it had not been discovered that there were three different positions on the glycerin radicle where the fatty acids could be fastened on. Two of these positions are alike and are called either *A* or *Alpha* position, while the third position would be known as the *B* or *Beta* position. Now this means we can have two fats containing the same amounts of Oleic and Palmitic acids, only in one case we would have di-oleo beta palmitin, and in the other case di-oleo-alpha palmitin.

Now the practical outcome of all this is that the two fats have the same chemical composition, and when spit up into glycerin and fatty acids, would show the same titer but the fats themselves would have different melting points.

Several Kinds of Olein and Lilonein

To make us still more trouble we find that there are several of Olein and several kinds of Lilonein, so that two oils having the same chemical constants might have quite different properties, as in the case of two houses each built with the same number of the same kind of bricks, but one may be a Queen Anne and the other a modern Colonial, when finished.

I have gone into the matter of the constitution of fats for the purpose of showing that the whole subject is not as simple as was once supposed, and also to impress upon you that although only three chemical elements—carbon, hydrogen and oxygen—are present in common vegetable oils, the difference between them are caused by differences in arrangement of these elements in the molecules. Though, as you see, we have barely touched on the chemical side of our subject, we must now pass on to the matter of food values and digestibility. To save time I have prepared some diagrams which will be shown on the screen later on, which will give a good idea of relative food values and digestabilities of the common fats and oils.

At this point, however, it seems appropriate to say something about the subject of Vitamines. You have all heard of McCollum and his white rats, and of fat Soluble A and water Soluble B, and various other vitamines, all of which have been overworked by the dairy interests to prove that unless children were fed on butter they would not grow up, or would have sore eyes, and all kinds of trouble. There is probably no subject on which so little is known and on which more has been written than this question of Vitamines. We must not close our eyes to the fact that there are such substances, though we do not know their composition, and that they have a marked influence in animal growth and health. They do not seem to be present in refined vegetable oils, but are present in small amounts in butter and certain other animal fats, also in eggs, green vegetables, raw meats and other foods.

The Japanese lived for centuries without cows, so did the South Sea Islanders, the American Indian and the Esquimaux. So it is quite fully demonstrated that people on a mixed diet can get along beautifully without butter, and there is no doubt whatever that children who receive plenty of milk along with other good wholesome food will get along quite as well eating margarin as they would on butter. To be perfectly frank, however, we must freely admit that delicate children and invalids should have butter in their dietetaries.

Manufacturing Problems

As your speaker understand the subject, the chief considerations in producing an acceptable margarin are: first, flavor; second, consistency; and third, keeping qualities.

Flavor, as we all know, depends on the character of the fat and the treatment of the milk used in churning. Though raised on milk, I do not pretend to know much about its use in margarin, so will confine my remarks to the fat end of it.

In making vegetable or nut margarins, the available materials are cocoanut oil, palm kernel oil, peanut, sesame, and cottonseed oils. If we want to talk "Nut Margarin" we must confine ourselves, in practice, to the first three.

Experience has shown that a neutral flavored fat is the one most to be desired, and this is only to be obtained by a careful refining of the oils used. There are various processes all based on the same principles, namely, Alkali Wash followed by filtration and steam treatment. Everybody does the same thing, but some do it better than others, though they don't tell how. As we all know, there are lots of little tricks in handling oils, and it is the way principles are applied rather than the principles themselves which count.

Cottonseed and Sesame Oils are both very suitable for Vegetable Margarin, but they cannot be made into Nut Margarin, not being Nut Oils.

In obtaining the proper consistency for a Margarin, we naturally try to follow butter as nearly as possible. This is somewhat difficult when using either refined Cocoanut Oil or a mixture of Cocoanut Oil and Peanut because the mixtures are too hard in cold weather and too soft in the summer time. Great improvement can be made by using hydrogentated Cocoanut Oil which has a much higher melting point. Nothing much has been published about these mixtures; that is my reason for mentioning them.

It is very important to bear in mind that fat mixtures cannot be expected to act in their physical properties in arithmetical proportion to those of their constituents. For instance, two fats of different melting points mixed in equal proportions cannot be expected to give a product with a melting point half way between.

Again, it is possible to have a fat with a relative high melting point which would be very soft in texture and vice versa, as in the case of Cocoanut Oil.

The question of keeping is largely that of an appropriate mixture of suitable melting point, cleanliness of manufacture and packing, controlled by rigid inspection at all points. Of course, it is only common sense to keep Margarine in cold storage as carefully as one would store butter.

As everybody knows, the Oleomargarin law was passed not to protect the public health, not to add increased revenue to a needy treasury, but solely for the purpose of killing the manufacture of a wholesome substitute for butter which would help keep down the high cost of living.

There seems to be something sacred about the cow and her product. You remember the story in the Bible how Moses, coming down from the mountain and seeing the children of Israel worshipping the golden calf, broke the ten commandments on the spot. We all of us sympathize with Moses. Our great American Congress has gone them one better in setting up the worship of a cow instead of a calf. Congress has passed a pure food law making the artificial coloring of food products to conceal inferiority a misdemeanor, punishable by fine and imprisonment, or both, yet allows the devotees of the cow to use yellow butter color with impunity, and taxes the Margarin manufacturers 10 cents a pound for using the same color. Yea, even though the sacred

(Continued on page 33)

James Wilson

Secretary of Agriculture

OVER in Iowa the other day, in the little village of Traer, where he and his Scotch father before him had lived and died, they buried James Wilson, Tama Jim, one-time Secretary of Agriculture. The stores and banks were closed and the tilling of the soil ceased, as the farmers for miles around came to take a last look at the face of their friend. The simple rites were carried on in the tiny village church. No music of brass and no panoply of state were there. The pastor of the Old Tranquility Presbyterian church, built by Secretary Wilson's father some seventy years ago, led the service and spoke of the dead man. Nothing was said of his work in the halls of Congress, or in the field of Agriculture. His record as a man, a neighbor, a friend, and a christian was examined by those who knew him for a lifetime, and found good. There were some flowers, and four farmer boys with silvery voices chanted the old hymns. Six sons bore the remains of their sire, and they put him away in the graveyard of the kirk, where all around his grave, rise thonsands of acres of golden corn, surely a fitting resting place for the man who gave his life to the farms.

These details are unimportant now, even as are the place where he was born eighty-five years ago, whom he married, the names of his children, and the degrees and honors which were his. All these are written in the books, but no farmer needs to read books to know the things Secretary Wilson did for his country. His deeds show their fruit in every farmer's field. The important thing is, not that he was sixteen years in the Cabinet, but that he introduced durum wheat into the United States: not that he gave up a seat in Congress that General Grant's widower might have a pension, but that he taught the boys and girls of the South how to farm; not that he was honored by foreign nations and by great universities, but that he increased the yield of corn; not that he was Dean of Agriculture, but that because of what he did our national wealth has been increased and life on the farm and the range has been made easier, safer, more profitable, and more human.

In 1897 President McKinley called James Wilson to Washington to sit in the cabinet as Secretary of Agriculture. There the new Secretary found, as has been well said, a few clerks and a few roll top desks which he speedily converted into a great department of government, so effective and so unique in its service for the good of the people, that its organization and methods have been copied by the leading nations of the world.

With a breadth of vision that was world-wide, Wilson saw what might be done with the tools at his hand. To the uttermost ends of the earth he sent explorers seeking new plants and new varieties of old plants which might be adapted to our conditions. To reduce the pests which plagued the fruit raisers of California he sent scientists to the region surrounding the Great Wall in China, where a bug was found which is the natural and effective enemy of the San Jose scale. When the boll weevil threatened the agriculture of the South no natural effective enemy could be found, but Wilson and Wilson's men met the situation in another and a better way. For thirteen years with patient hopefulness Secretary Wilson financed the efforts of a young scientist in one of the quiet laboratories of the department, and the result was the hog cholera scrum which has saved the farmers and the country from an annual loss of millions of dollars. When the dreaded foot and mouth disease invaded this country, Wilson on two occasions promptly stamped it out. He helped the southern cattle raiser and through him the nation by freeing a great area, nearly 200,000 square miles, from the fever tick which causes cattle to sicken and die from Texas fever. The list of his splendid achievements is so long that no great part of them can even be mentioned in this brief word of appreciation. The tobacco grower in Connecticut, the rice planter of the southern lowlands, the date raiser of the western deserts, the breeder of horses and cattle the country over, the men of the corn belt, and the hardy yeomenry of the Dakotas know his record and they pronounce it good. The dwellers in the cities thank him for the protection to their food supply afforded by the forces he organized under the pure food law and the meat inspection law. When in 1913 Secretary Wilson laid down his office this was a better, and a richer country because of his work, and there was no citizen who had not benefited in some way or other.

Of Wilson the man, it may be said that those who knew him, loved him. Gentle, kindly, and cultured, he was a pleasant companion and a loyal friend. As an administrator he was calm and fearless. As an employer he was just and considerate. Let us hope that we or our children may see his like again.

St. Louis Welcomes You

GREETINGS:

To the Delegates and Visitors of the Association of American Dairy Food and Drug Officials Convention, St. Louis, October 5, 6 and 7, 1920.

The City of St. Louis officially, the civic and commercial interests, and the population of St. Louis, as individuals, and as a whole, extends a cordial and hearty welcome to you and urges you to come to St. Louis to partake of the hospitality of our great city during the convention dates of your organization and on any other occasion when you find the time to pay us a visit.

The city, which is modern in educational institutions, office buildings, hotels, beautiful parks and accommodations, and which has many of the finest homes in the country and is at the same time older than the United States and rich in romantic traditions, throws open the gates of goodfellowship to you, and its citizens beckon to you to come.

St. Louis, located midway between the center of population and the geographical center of the United States, is the central convention city of North America and because of the strategic position and its twenty-six railroads can be reached from all parts of the country more easily and more quickly than any other city in the United States without an exception. With the facts in mind, the citizens of St. Louis expect you to come from all corners and centers of this great country of ours to take part in an interesting and instructive program which has been arranged for the convention.

Very cordially,

Henry W. Kiel, Mayor of St. Louis.
St. Louis Chamber of Commerce.
St. Louis Convention, Publicity and Tourist Bureau.
Associated Retailers.
Advertising Club of St. Louis.

Science Increases Sugar Production

Chemists Perfect Process of Protecting Raw Product from Mold and Bacteria

MORE sugar will be available for everybody through the discovery of a process of keeping it from being injured by molds and bacteria.

Fully one per cent of the Cuban crop, or about 70,000,000 pounds of sugar a year and worth at least $1,500,000 it is estimated has been destroyed by the tiny, greedy organisms which compete with the sweet tooth of mankind. As the per capita consumption of sugar in the United States is approximately 81.84 pounds annually, the amount hitherto consumed by the molds and bacteria would supply 873,000 persons for a twelve month period. This would keep the sugar bowls of a large city full. Counting each family as five persons, 175,000 of such groups could be kept sweet tempered during this period from the supply which has been wasted by the invisible hordes.

Mr. Nicholas Kopeloff and Mrs. Lillian Kopeloff, bacteriologist and assistant bacteriologist at the Louisiana Sugar Experiment Station in New Orleans, and members of the American Chemical Society, have just completed a bulletin on the method of preventing the molds and bacteria from wresting sweet solace of the beet and cane from mortals.

Damage Done by Molds

Sugar loses its sweetness because molds consume the sucrose, which is its sweetening factor. Although the amount thus lost may be only a fraction of one per cent and far too slight to be detected by the senses of taste or smell in many cases, it is easily determined by the polariscope, an instrument especially designed for measuring the amount of sucrose present. When sugar deteriorates, not only does the polariscope detect the difference, but any one who is sufficiently observant will note that it will actually take a larger spoonful to give the same sweetening power. Thus, if a barrel of raw sugar should be kept through the summer months and it is infected with harmful micro-organisms, it might be necessary to use an extra half-spoonful at the end of the summer to get the same sweetening power that could be obtained before deterioration took place. As all sugar is sold strictly on the polariscopic basis, even small losses aggregate huge sums.

The usual source of these molds is the air, which contains millions of micro-organisms at rest and in circulation. Each individual mold, if it falls on an object which can supply it with sufficient food, such as sugar, can reproduce 300,000 more individuals of the same species in less than a week. This reproduction, however, can only take place in the presence of sufficient moisture, otherwise the organisms lie dormant. Cane sugar primarily undergoes such losses by deterioration in transportation or storage, mainly due to the absorption of moisture by sugar in damp weather or humid climates.

For example, sugars made in Cuba are stored in the hold of a vessel, often with insufficient ventilation, which causes them to "sweat." While coming from a tropical climate into cooler water the moisture condenses on the surface of the sugar. This also occurs when sugar is stored for any length of time, especially at high temperature, as in refineries, where some is melted up at once and the remainder is held in storage for varying periods, as dictated by business needs. Sugar

(Continued on page 36)

Olives—a Prehistoric Food From California

Being a Complete History of the Olive Industry and an Analysis of Their Food Value

CENTURIES before the Sermon on the Mount—the Mount of Olivcs—the olive industry was one of the principal sources of livclihood in the countries bordering the Mediterranean Sea where today nine million acrcs of trecs still bring profit to their growers. At the time of the Exodus the Israelites found olive trees in Canaan. Later they were transplanted to Spain. From Spain they wcre taken to Mexico and from Mexico they were carried by the early Franciscan Fathers into California where they flourished in the gardens of the San Diego Mission before America waged her War of Independence.

From that day to this, native Californians have recognized the food value of this pre-historic fruit. Writers of California travels for the last century have repeatedly mentioned the tub of ripc olives to be found at the back door of even the most humble of shacks on the great ranches of the West.

The Beginning of the Industry

Owing to the difficulty of competing with cheap European labor in picking green olives and manufacturing oil for the market, however, olive growing did not show symptoms of becoming a great industry in the Wcst until 1901 when Professor F. T. Bioletti of the Universsity of California demonstrated a process whereby ripe olives could be sterilized and canned for the market so that thcy would keep indefinitely.

This gavc thc California olive men a monopoly over the European growcrs who lacked this pcrfected process of sterilization. It is upon the canned ripe olive, thcrefore, that the California industry is based.

There arc at the prcsent time forty thousand acres of bearing olive trees and over three thousand acres coming into bearing annually in California—an industry that, including forty-two processing plants, involves an invcstment of twenty-five million dollars, and an annual production valued at about five million.

It was conservatively estimated last year that since the beginning of the industry about fiftecn years ago one hundred and eighty million containers of ripe olives have gone upon the market and nine million more were supplied to the epicures of the nation in 1919.

These tremendous figures together with the undue importance that editors throughout the country gave to the fact that, in six containers out of the one hundred and eighty million, the olives were spoiled when they were eaten, both stand as evidence of the fact that what was an infant industry only fiftcen years ago has now grown to national proportions.

There arc still available in California five hundred thousand acres suitable for planting olives. The canned ripe olives to be gathered from this acreage annually at current prices would be worth two hundred and fifty million dollars, but at the rate of growth which the industry has enjoyed since its beginning, it will not be many years before demands will be made upon this entire acreage.

Even thc temporary set-back of last winter, however embarrassing it may be to some fifteen hundred growers and to over eight thousand people involved in the industry, can have no lasting effect upon thc consumption of ripe olives.

Olives as Safe as Any Food

Disasters from eating spoilcd foods havc occurrcd and will continue to occur so long as pcople fail to exert proper care in examining the foods they cat. As many cases have occurred annually in thc City of New York alone from food spoilage in such common products as milk and mcat, and elicited little or no comment from the press.

People will soon realize, as their common sense can only forcc them to realize, that what occurred in ripe olives last wintcr might havc occurred with any food product; that in rcality the proportion of spoilage in ripc olives is smaller than that of many of the commoncst foods they consume daily.

Scientific Investigations

The incident has served its purpose in focusing upon the olive curing processes, which already held a record equal to that of any other food product made in this country, the minntest investigations of the greatest scientists in the world. One hundred thousand dollars was set aside by the National Canners' Association, the Canncrs' League of California and the California Olive Association to pay thesc scientists for intcnsive rcsearches that will make California ripe olives the safest and most scientifically prepared food on earth.

In a report made by these scientists in the latter part of July and confirmed by the California State Board of Health, they gave the results of their six months' study. They reported that the germ resulting in the spoilage olives is a soil product in no way diffcrent from that found at rare intervals in other fruits and vegetables, and that it may be completely dcstroyed by sterilization at a temperaturc of 240 degrees.

Even today in the words of Professor Cruess of the University of California, "more care is taken in thcir preparation and a longer time and higher temperatures of sterilization are used than with any other canned fruit." Professor Biolctti, the father of the ripe olive industry, has estimated from the known number of cases of spoiled ripe olives that onc would have to cat a quart a day for three thousand years to stand cven the slightest chance of being harmed. It is doubtful if this could be said of milk or meat or even the commonest articlcs of our diet. Indeed as Professor M. E. Jaffa, Consulting Nutrition Expert of the University, said, "Few foods can be consumed with as great confidence as the canncd ripe olive."

But the quality of the ripe olive that is destined to givc it grcater popularity as it becomes better un-

derstood is its food value. Food authorities state that the ripe olive possesses great food value. The oil is in a state of natural emulsion, ready to be digested promptly without the possibility of interfering with the digestion of any other food. Because of the larger percentage of proteids and albumen, the olive is almost a "perfect substitute for meat."

This quality of the ripe olive has been given the most intensive study by Professor Jaffa, whose investigations are so conclusive and enlightening that we reprint them here in full. He says:

"The ripe olive is too often considered merely as a relish, rather than a food, in that it is classed among the pickles and condiments, whereas it should be classed among the foods. The significance of this statement will be appreciated by a glance at the following table showing the analysis of the ripe olive, green olive, pickles, bread, rice and potato.

	Water Pct.	Prot. Pct.	Fat Pct.
Olive, ripe	69.60	2.00	21.00
Olive, green	78.41	2.43	12.90
Pickles	93.80	1.10	.40
Bread	35.50	9.20	1.30
Boiled Rice	72.50	2.80	.10
Boiled Potato	75.50	2.50	.10

	Carbohydrate Pct.	Ash Pct.	Fuel Val. Per lb. Calories Pct.
Olive, ripe	4.00	3.40	958
Olive, green	1.78	4.48	598
Pickles	4.00	.70	110
Bread	53.10	1.10	1215
Boiled Rice	24.40	.20	525
Boiled Potato	20.90	1.00	440

"Comparing the ripe and green olive, it will be noticed that the percentage of fat or oil in the latter is only about 60 per cent of that yielded by the former. This would appear to be, according to the chemical analysis, the main difference between the green and ripe fruit, which difference is further confirmed by the figures indicating the fuel value of calories per pound.

More Nutriment in Ripe Fruit

"But this difference in oil does not indicate the whole difference between the two forms of fruit, because undoubtedly the nutriment in the ripe fruit is in a much more digestible and readily assimilable form than in the green. The green fruit is unripe and therefore to a certain extent immature. It is readily seen that it is to the interest of the consumer to buy the ripe olive rather than the green, in that he receives for his purchase far more nutriment in one case than in the other.

"This, however, is not the only interesting point brought out by a study of the table. Bread is generally considered to contain, weight for weight, far more nutriment than is found in the olive, yet as far as the total food value of heat units is concerned it will be noted that in one pound of ripe olives we have practically three-fourths of the caloric value noted for bread, which value is, in the case of very large olives, increased to approximately the same as bread.

"Again, if we compare the ripe olive with rice as eaten, it will be noticed that in one pound of ripe olives there is practically twice as much nutriment, if we take the calories as a basis for comparison, as in the rice.

"In a pound of cooked macaroni we have about 400 calories, while in a pound of olives, edible condition, we have between 900 and 1,000 calories. It is, therefore, seen that the ripe olive, as far as food value is concerned, compared very favorably with many of the ordinary foods.

A Substitute for Meat

"It is not always correct, however, to compare food values on the basis of calories alone, because the real value of the food to the body depends on the ingredients more than the caloric value. For example, one pound of sugar contains 1,820 calories, one pound of meat less than 1,000, yet one would hardly say that one pound of sugar is equal to a pound of meat when the question of growth is concerned, and similarly with reference to olives. One pound of olives with 1,000 calories, if we are considering growth and replacement of worn out nitrogeneous tissues, would not be worth to the body as much as a pound of meat with 1,000 calories, but as a source of muscular energy the olives would be a most excellent supplement to foods such as meat or fish.

"Summarizing in brief, then, it may be said that the ripe olive is a very valuable, palatable and easily digestible form of food and should be considered as such, and not as an accessory or condiment."

We may add, then, to our pleasure in the delectable flavor of the ripe olive the satisfying realization that it is a food, that, as well as being an appetizer, is an appetite satisfier, adding many calories of nourishment to the meal.

On the Pacific Coast, where the consumption per capita is five times that in any other part of the country, this fact is thoroughly understood and it is not unusual to find ripe olives served in large bowls or tureens as much as another vegetable.

Must Be Processed Before Eaten

That they cannot be eaten directly from the tree is one of their most disappointing features to the Eastern travelers in California. In this regard they are unique among fruits. The rich black clusters have a most appetizing appearance but woe be unto him that would sample the fruit in the orchard. For several hours he would be going about seeking to remove the bitterness from his mouth. It is needless to say that the growers are not troubled with orchard thefts.

Because of this flavor of the ripe fruit it must be passed through a long process before it is ready for the market.

The details of the process, which vary greatly in different factories, are given in detail by Professor Cruess of the University of California. One of the most common methods involves the following steps:

"1. The fruit is first sorted for size and color, i. e., degree of maturity.

Treated With Dilute Lye

"2. It is then placed in a dilute lye solution varying from ¾ per cent soda lye (sodium hydroxide) to 2 per cent and left with frequent stirring until the lye has penetrated a short distance through the skin. The fruit is still bitter. The first lye is used merely to assist in retention of and intensifying of the color. The first lye treatment requires from three to ten hours, depending upon the size, variety and maturity of the fruit, the temperature and the concentration of the lye solution.

"3. The lye is then drained off and the fruit is exposed to the air. It is stirred several times daily by filling the vats with water and stirring with compressed air or a wooden paddle. The exposure usually lasts 24 to 72 hours and is for the purpose of darkening the color of the fruit by oxidation. Some factories treat the fruit a second or third time with dilute lye, followed by a short exposure after each treatment. Some picklers do not expose the fruit to the air at all but darken the color by passing compressed air through the liquids (lye or water) used in processing. This process was developed by the University and given to the public under public service patent 1,257,584.

"4. When the fruit has acquired the desired color it is again treated with dilute lye until the lye has penetrated to the pits. This destroys the bitterness.

"5. The lye is removed by soaking the fruit for about one week in water which is changed several times daily.

Flavor Developed by Brine

"6. After removal of the lye the olives are placed in a dilute brine of 2 per cent to 5 per cent salt for a few days to develop flavor. It is then ready for canning.

"The olives are again sorted for color and quality before canning. Fruit which has not been sufficiently processed is recognized by its color and is removed. Broad canvas belts are used for sorting.

"The sorted fruit is usually graded for size. This is desirable because the fruit is of such uneven form that the size grading given before pickling is usually not sufficient.

"The sorted and graded fruit is filled into cans or jars by weight. A dilute brine (2½ to 5 per cent salt) is added. Cans are exhausted by passing them through a steam box at 185 degrees F. to 210 degrees F. The heated cans are sealed in sanitary can double steamers. Jars are exhausted and sealed under special vacuum sealers.

"The sealed containers in nearly all factories are sterilized in large steam pressure retorts at 225 degrees F. to 240 degrees F. temperatures well above the boiling point of water and which are high enough to insure thorough sterilization. A few factories use boiling water for sterilization, but for a period of time several times greater than that given any other canned fruit.

"Erroneous statements from various sources have appeared recently in the press to the effect that canned olives are not heated. This statement is at variance with the facts. Ripe olives are sterilized at high temperatures."

Cautions Public Against Imitation Orange Juice

Many So-Called Orange Drinks Contain No Fruit Juice, But Are Colored With Dye to Imitate Orange Juice, and Flavored With Oil From Orange Peel

ALL is not orange juice that is orange colored these days. Nor is it orange juice because it comes in a bottle with an attractive picture of that fruit on the label, explain officials of the Bureau of Chemistry, United States Department of Agriculture. The wise in this era of soft drinks read the label critically before they buy or drink the contents of a bottle, the advice of the Federal food officials goes on.

The juice of the orange is one of the most healthful of beverages, they say. It contains organic acids of medicinal value and substances known as vitamines, which are essential to health. But the trouble is that many of the so-called orange drinks which are on the market contain none of the real orange juice. These imitations are usually concocted of sweetened, artificially carbonated water, colored with a dye to imitate orange juice and flavored with a little oil from the peel of the orange. While they may not contain ingredients injurious to the health of adults, they are imitations which lack the medicinal qualities characteristic of fruit juices. They should not be used in place of genuine orange juice, the officials say, especially as a food for babies and young children. A few of the bottle orange drinks do contain some of the genuine fruit, but when orange juice is needed in the diet of children the best way to obtain it is to buy the fruit and press out the juice.

Should Read the Label

The information as to what a bottle of soft drink contains ordinarily can be found on the label, but sometimes a magnifying glass may be required, if the thirsty one does not have strong eyes. The manufacturer is usually very modest in displaying this information, but to conform with the Federal food and drugs act he must place it on the label. The terms "ade," "squash," "punch," "crush," and "smash" can only be applied correctly to beverages which contain the edible portion of the fruit or juice of the fruit named on the label, Bureau of Chemistry officials say, but this year many beverages with fanciful names, beverages which are imitations of fruit juices and which have only the odor or flavor of the fruit of which they purport to be the juice, are being placed on the market.

Will Enforce Law

The officials in charge of the enforcement of the Federal food and drugs act have instituted proceedings to require correct labeling of the products coming within the jurisdiction of that law. In the meantime, pending judicial determination as to what is correct labeling of these products under the law, some manufacturers are continuing to put their deceptively labeled drinks on the market. Attention is called to the fact that the soft-drink industry is largely a local industry. Many of the bottle soft drinks are sold and consumed within the States where they are made. Such drinks are not subject to the Federal food and drugs act, which applies only to foods and drugs that enter interstate or foreign commerce or that are made or sold within the District of Columbia or a Territory.

300 Prosecutions Necessary to Stop Use of Saccharin

DURING the past six months, 1,440 samples of non-alcoholic drinks were purchased and analyzed by the official chemists of the Bureau of Foods, Pennsylvania Department of Agriculture, and 328 prosecutions instituted where saccharin was used as a substitute for sugar.

Director Foust states that the special agents in the field have been devoting practically all of their time during the summer months to buying samples of soft drinks and prosecuting cases. Owing to the high price and scarcity of sugar, the bottlers have resorted to the use of saccharin in many sections of the Commonwealth, and the food and drink laws of Pennsylvania specifically prohibit the use of saccharin. It is a chemical and has no food value, is 550 times sweeter than sugar, and is injurious to health.

Director Foust further states that the nefarious practice has been almost broken up, but it took over 300 prosecutions and the criminal courts staring the soft drink industry in the face to bring it about.

Program

Twenty-Fourth Annual Convention

of the

Association of American Dairy Food and Drug Officials

St Louis, Mo., October, 5th, 6th and 7th, 1920, Hotel Jefferson

OFFICERS

GUY G. FRARY, President.....Vermilion, S. Dakota
JAMES SORENSON, First Vice-Pres.....St. Paul, Minn.
R. E. ROSE, Second Vice-Pres.....Tallahassee, Florida
FRED L. WOODWORTH, Sec.....Lansing, Michigan
GEORGE J. WEIGLE, Treasurer.....Madison, Wisc.

EXECUTIVE COMMITTEE

The President and Secretary.
GEO. L. FLANDERS.....Albany, New York
E. F. LADD.....Agricultural College, North Dakota
A. M. G. SOULE.....Augusta, Maine

TUESDAY, OCTOBER 5th

OPENING SESSION—9:30 A. M.

Invocation.....Dr. Geo. B. Kuhlman
Address of Welcome..Senator Xenothon P. Wilfley
Representing the Governor of Missouri
Address of Welcome.....Henry W. Kiel
Mayor of St. Louis
Response to Address of Welcome..Wilbur F. Cannon
Food and Drug Commissioner, Colorado
Appointment of Credentials Committee.
Report of the Secretary.....Fred L. Woodworth
Food and Drug Commissioner, Michigan
Report of the Treasurer.....Geo. J. Weigle
Dairy and Food Commissioner, Wisconsin
Posting of Amendments to Constitution and By-Laws.
Offering of Resolutions.
Appointment of Committees and Announcements.
Address of President.
12:30. Get-together Luncheon at Hotel Jefferson, with entertainment.

AFTERNOON SESSION—2:00 P. M.

The New Pharmacopoeia and its Relation to Public Health..... Professor L. E. Sayre
Dean, School of Pharmacy, University of Kansas
Member of Pharmacopoeia Revision Committee
The Retailer and the Pure Drug Law
Theodore F. Hagenow
President, National Association Retail Druggists
False Advertising and False Labels
Dr. W. G. Campbell
Assistant Chief, Bureau of Chemistry, Washington

Announcement of the times for hearing committee reports will be made from the rostrum.

All members, their guests and visitors are asked to take lunch together on the first and last days of the convention. These luncheons have been planned for the purpose of furthering good-fellowship and better acquaintance among those attending the convention. A private dining room will be provided by the hotel, and entertainment will be taken care of by some of our own number. A plate lunch at moderate price will be served.

WEDNESDAY, OCTOBER 6th

MORNING SESSION—9:30 A. M.

Sanitary Control in Food Inspection
Dr. Harrold Knapp
Chemist, Department of Health, Cleveland
The Enforcement of the Sherley Amendment
Dr. M. W. Glover
Chief, Office Drug Administration, Bureau of Chemistry
The Retailer and the Pure Food Law
John A. Ulmer
President, National Association of Retail Grocers, Toledo, Ohio

NOON

At noon all members of the Association and their friends and guests will be taken to an industrial plant for luncheon and inspection of the plant, returning direct to the hotel for the afternoon session.

AFTERNOON SESSION—2:30 P. M.

Food Poisons.....Dr. R. E. Buchanan
Iowa State College, Ames
The Relation of Uniformity in State Food Laws to the Enforcement of the National Food and Drugs Act...Dr. Carl L. Alsberg
Chief, Bureau of Chemistry, Washington

EVENING

Left open for delegates and visitors to enjoy themselves as they please.

THURSDAY, OCTOBER 7th

MORNING SESSION—9:30 A. M.

The entire morning period will be given over to an executive session open only to persons directly connected with Federal, State or Municipal agencies entitled to membership in the Association. At this time it is expected frank discussion of administrative matters may be had and freedom felt in asking questions concerning problems difficult of solution.

NOON

Get-together Luncheon at Hotel Jefferson, with entertainment.
Chemical Method for Determining Immature Citrus Fruit.....R. E. Rose
State Chemist, Florida
Report of Resolutions Committee. Receiving Invitations for Next Convention. Miscellaneous Business. Election of Officers. Adjournment.

Arrangements have been perfected for inspection trips to food and drug plants under the direction of competent guides. These will be announced so that members may choose the trip or trips they prefer and make arrangements accordingly. Full and free discussion of each paper presented is encouraged and it is hoped the members will feel free to enter into discussion and ask questions. The number of topics chosen has been purposely kept down so as to allow time for discussion. Members are urged to prepare questions for discussion during the executive session Thursday forenoon. On Thursday evening a dinner and stag party for the men at the Riverview Club, ten miles from St. Louis. Also a dinner and theatre party for the ladies.

The Making of Macaroni

How the Italian Prepares the Foundation of His National Dish
(From a report of Consul B. Harvey Carroll, Naples, Italy)

MACARONI is composed of ground wheat and water and nothing else. In the plant at Castellamare the entire process of manufacturing the ground wheat is done automatically. I say "ground wheat" and not "flour," because in normal times macaroni was not made of soft, or rolled, flour, but of wheat cut very fine by rollers so as to resemble a very high quality of corn meal or grits. This is called "semolina."

Wheat arrives at the plant in jute sacks. It is emptied into hoppers, from which it is conveyed by suction into winnowing bins, where all dust, chaff, and lightweight grain are sifted out. The lightweight grain becomes the first by-product. It is known as "scarto di grano," and is sold for chicken feed. The quality of scarto di grano varies with the quality of the wheat furnished. The best California hard wheat, used before the war, was free from scarto. From the winnowing bins the fat, heavy grains are carried into cylinders, where they are thoroughly washed by a churning process, and pass slightly heated, and, still by suction, again to make their passage of the grinding rollers.

There are seven of the grinding mills through which the grain passes. The first breaks it; with the second the coarser glazed envelope the grain, known as bran, commences to be separated. This bran becomes whiter and finer with each milling process, and the grain is cut finer and more regularly each time, until the perfect semolina is produced. At the same time there is a fine, light, powdery, non-nutritious flour dust that is fanned away, which is afterward collected and sold added to the bran and used as food for animals. This powdery flour may be said to be the second by-product and the bran of the third and last, if they are considered separately.

Names of the Various Forms

Macaroni paste is made by adding, in a large mortar or mixer about 25 kilos of water for every 100 kilos of semolina. This is mixed into stiff paste of the consistency of putty. It will not stick to the fingers. It is then taken to a kneading machine, where fluted rollers work it thoroughly. The paste is then loaded into a cylinder, at the base of which is a perforated metal plate about 2 inches thick.

This plate is the form of die which determines the shape of the macaroni. The plant at Castellamare has more than 200 different dies of forms for shaping the paste. Some of the forms have names according to their shape and some have names more or less fantastic. The very smallest forms of "pastine" or cut paste have names such as "pepper," "big pepper seed," "chicory seed," "Rosmarino," "oats," "melon seed," "little stars," "ring stars," "ings," "triglie" (a species of goldfish,) "trubelets," and "alphabet letters." Besides these forms there are the larger forms in fantastic designs, such as conch shell, snails, and other shell forms, playing card emblems, (hearts, clubs, spades, and diamonds), and also the fluted forms of flat pastes, variations on the tube forms, flat tubes, corrugated tubes, compound tubes, square tubes known as elephant teeth, and knotted tresses or locks of the very finest macaroni threads, called "capelli d'angelo," or angel's hair.

The plates or dies are interchangeable. The cylinder, which is of steel, is like a huge churn in which the dasher presses the paste against the bottom, whence the paste issues in a form corresponding to the orifices in the plate. The cylinders are in pairs, revolving around the central steel shaft, so that while the great dasher is pressing the paste out of one cylinder the other is being charged.

Some of the cylinders are placed horizontally instead of vertically, and revolving knife blades clip the tubes of soft paste as they issue from the plate. In this way the short-length macaronis are made. The macaroni most in use now is a simple tube about one fourth inch in diameter cut in this way. These pieces are known as "ditali," or fingers.

Drying and Packing Methods

The simple vermicelli form, which is a string and not a tube, is also in much favor. This and the ordinary long macaroni tube forms are prepared in the same way. The paste is pressed out through the orifices and allowed to dangle beneath the cylinder until it looks like a fringe 1 or 2 yards in length. A boy then takes these paste strings by the armful and throws them over a bamboo pole held up between two supports and rapidly, by touch, sorts them out until they are spread in a single layer on the pole.

The bamboo poles are placed close in covered rooms. In good weather in the open air and in bad weather in a drying room. In the artificial drying room air slightly heated is kept in swift circulation by revolving fans. The short-length macaronis are placed in trays with woven wire bottoms. At some stages the short pieces are spread out like drying seed on tarpaulins in covered rooms. In good weather all macaroni is dried in the open air, the air-cured macaroni being superior in quality to that cured in dry rooms.

The finer qualities and unusual shapes of paste are packed in colored cartons or boxes in normal times.

Colored Macaroni

At Bologna there are certain variations of the paste itself, made which are seldom shipped to America, as they do not keep well. There macaroni is also found in colors of yellow, green, and red. The yellow is made by the addition of eggs for flat cut pastes known as "Bologna tagliatelli." An admixture of the spinach gives the green paste, and the blood of the beet furnishes the red color.

Wheat for macaroni making is of a special quality of hard grain, rich in gluten. Most of it is imported into Italy in normal times, largely from Roumania, although North America furnishes a considerable part. California wheat is preferred as being of the best quality, hard, large, and very clean.

Reports from the Northwest indicate that there has already set in a heavy demand for loganberry juice made from the 1920 crop of loganberries. This industry has been flourishing for some time past, sales totaling $1,000,000 four years ago, and having increased steadily.

Pointing Out the Milky Way To Health

Milk Campaigns Combat Undernourishment

WHAT is a milk campaign? Just ask some one from Boston, Detroit, Pittsburgh, Spokane, Seattle, or Kansas City—or in fact from any of the 34 cities that have completed campaigns during the past 18 months. These citizens will tell you what a milk campaign can do for health improvement; and it is obvious that when a movement spreads as rapidly as the milk campaign has, there is something to it.

The milk campaign has brought results. That is why it is popular. It is the chief answer and remedy, all in one, to the question, "What's wrong with our children's diet?" or our own diet, for that matter.

Too Much Undernourishment

American citizens, who have always been noted for their progressiveness, will be surprised to learn that right in their own country there is a large per cent of undernourishment among children. Figures from many parts of the country prove this, according to the milk utilization specialists of the United States Department of Agriculture, who are co-operating in the milk campaigns. In our greatest city, New York, for instance, it was found that the percentage of undernourished children had increased from 5 per cent in 1914 to 21 per cent in 1917-18, and that this increase had accompanied a decrease of 25 per cent in milk consumption. Figures from country districts tell the same story. In one Missouri county it was found on weighing and measuring 400 school children that 50 per cent were 10 per cent and more underweight for their height and age.

Investigations showed that this condition was not confined to any one class—rich, poor, and middle class all being represented. Apparently, then, it is not lack of money which has brought about this condition, but rather lack of information.

As a means of combating this growing tendency toward undernourishment, the idea was developed of designating one or two weeks as milk weeks, and concentrating all available forces to the task of bringing before the people of a community the food value and healthful qualities of milk. This was the origin of the milk campaign.

A milk campaign is a highly organized educational drive in a city or in a rural district. When it has been found by the citizens that a campaign is needed, the first step is to call on the State College of Agriculture for co-operation. If the conditions warrant the campaign, the co-operation of the Dairy Divisions, United States Department of Agriculture, is requested by the Extension Department of the College of Agriculture. The college generally furnishes a corps of trained lecturers, and the Dairy Division lends assistance in planning the campaign and contributes literature, exhibits, and some personal assistance if desired.

Neither the College of Agriculture nor the Federal Dairy Division will co-operate in a campaign until it has been found that the people of the locality really want it and are willing to work for it, that the supply of milk is clean and wholesome, and that the price of milk is right and will not be raised by the dealers, due to increased demand.

Effective Campaigns at Small Cost

What does a milk campaign cost? Figures from campaigns already completed show that the cost varies from $85 to $8,000, depending largely upon the size of the area and the amount of advertising used. The cost of a campaign, however, is no indication of the results. Some of the least expensive campaigns have been the most effective. The campaign in Davenport, Iowa, which brought unusually good results, was put on for the small sum of $85. Funds are contributed locally for the work.

Organization in carrying out such a campaign, especially in the larger cities, is of the utmost importance. Long before the starting of the active work, the committees in charge of various activities, such as publicity, finances, transportation, etc., are chosen, and the entire plan of the campaign is mapped out. The co-operation of the various local organizations is secured, such as board of health, newspapers, milk dealers, schools, churches, chamber of commerce, etc.; and each one is made to feel that it has an active part in the work of the campaign.

When the opening day has arrived everything is in readiness, and every cog in the wheels of this great machine moves smoothly. Press notices and advertisements appear in the local papers. Posters on the food value of milk and displays in the store windows greet the eye at every turn. The demonstrators and lecturers hurry from point to point to meet their numerous engagements, spreading the gospel of milk and good health in factories, stores, schools, clubs, theaters, churches, and the meetings of labor unions and various other organizations.

Of all these methods of spreading the message of milk, none has proved more effective than work in the schools. In fact, records show that there is a sharp line of demarkation between the results obtained with and without school co-operation. They vary from 10 to 30 per cent increase in consumption in cities where the schools take a part in the work, down to only 1 to 3 per cent where they do not.

Schools an Important Factor

Through the schools the children are reached directly. They learn from the women extension workers that milk will nourish their bodies and help them grow. Contests in designing milk posters and in writing milk essays also stimulate interest in the subject.

Children in city schools, and especially those of foreign extraction, know very little about milk. Many have never seen a cow, and when asked where milk comes from, answer: "From the store." One little girl thought a cow was 4 inches high.

Other children, however, seem to know more about it. One little girl said, "Milk makes one strong,

healthy, and wise," while another child vouchsafed the information that "the four glasses of milk in a bottle made him just four times better than he already was."

A novel method of urging the use of milk was tried out in a New Jersey city with success. Just as school was letting out a cow was brought up in a truck and milked in the street. At one school 600 children gathered around to see her milked. "Such excitement, you would have thought a circus was in town," wrote one of the extension workers. It took two policemen and five workers to restrain the excited mob. One cow, of course, could not furnish enough milk for such a crowd, but an additional supply was brought up in trucks and eventually everyone got a drink of real milk. Mothers came from all around, bringing their babies with them.

Most children like milk anyway, and when milk is supplied to them in the schools they rarely leave a single drop in the bottle, especially if they can drink it through a straw. Parents often raise the objection, when advised to give their children more milk, that their boys or girls will not drink it. When the boys and girls come from school, however, and tell their parents that they want milk they get it.

Campaign Followed by Demonstrations

When a campaign is closed the work is followed up with milk-feeding demonstrations in the schools. In all cases on record the feeding of milk has resulted in substantial gains in weight, rate of growth, and mental alertness. The results of the feeding demonstrations following the Massachusetts campaign, for instance, give some idea of what is being accomplished. In Hampden County 48 undernourished children were given a quart of milk daily for six weeks. These children made an average gain of 1 pound and 13.7 ounces, while the normal gain for health children carefully fed, for the same period, would have been only 11 ounces.

Eight of these children made phenomenal gains of more than five times what normally they would be expected to make. One of these was a lad who had never had milk except occasionally on Sundays. He was delighted with his gain of 64 ounces in six weeks. His color and energy on the last weighing day, as he consumed with relish his bowl of bread and milk, indicated that he had gained in vigor and alertness as well as in weight.

Of course the results of milk campaigns in different cities and rural districts have varied greatly, but where a complete campaign has been put on the increase in consumption of milk has been found to be from 10 to 30 per cent. Other dairy products, too, such as butter, cottage cheese, and buttermilk, have come in for substantial gains. In Detroit, for instance, a 35 per cent surplus of milk which occurred during the spring season of heavy production was eliminated. The use of whole milk increased 10 per cent, butter 15 per cent, cottage cheese 3 per cent. For one firm alone the weekly sales of butter were increased 20,000 pounds, and of milk 50,000 quarts. Topeka, Kans., reports that the sales of butter jumped 30 per cent, and of milk 25 per cent.

Invertose

EVERY great discovery is but the expression of a great world need. As long as cane sugar or beet sugar were obtainable in unlimited quantities and at a price of less than five cents a pound there was little or no occasion for extending the world's knowledge of sugar. There was no incentive for discovering new sources of supply.

But with a world sugar shortage existing and with the apparent certainty that it would continue to exist for years to come, there arose a vital need for a source of supply and a product that would supplement or even supplant the diminishing and inadequate supply of cane and beet sugar.

Some three years ago a research chemist of Baltimore, Arthur W. Smith, began to investigate the question of making sugar from starch. He turned to corn starch because his routine work dealt with corn and corn products. As he followed the routine methods of producing glucose or grape sugar and maltose or malt sugar he thought that he discovered evidences of a form and character of sugar as yet unknown. Working on definite principles, Dr. Smith was able to increase the yield of this new sugar and at the expense of much time and infinite patience he at last found a method of producing the sugar commercially.

To this new sugar Dr. Smith has given the name INVERTOSE. This name expresses more clearly than any other could the true character of this new sugar. Invertose is very sweet. It has the physical and chemical characteristics of that group of sugars to which levulose belongs. Levulose is the particular sugar to which invert sugar owes its sweetness. Hence, the name Invertose.

Apparently Invertose is in itself crystallizable. In its liquid form Invertose resembles nothing else so much as pure invert sugar. But when crystallized out, the crystals themselves seem to possess all the sweetness of cane sugar which would seem to eliminate the possibility of the crystal sugar being dextrose only.

Crystallized Invertose has approximately the same sweetening power as granulated sugar. It possesses all the characteristics of cane sugar and can be utilized for every purpose where cane sugar is now being used.

As Invertose is made directly from starch all or any of the numerous starch-bearing materials grown in all parts of the world are available for the production of Invertose. These include, cereals of every description, potatoes, tapioca, etc., etc.

To any one who is familiar with the amount of starch available the vast economic importance of Invertose can be instantly realized.

To take only the corn crop of the United States as an example,—it is so large as to produce, if utilized for Invertose, over ten times as much sugar as the entire cane sugar crop of the world available today.

Invertose literally offers the solution of the world's growing sugar shortage and its increasing demand for sugar. It offers a dependable supply and it makes possible the satisfying of the world's sweet tooth at greatly reduced costs.

The process of making Invertose is and will be for some time entirely a secret one. Ample steps have been taken, however, to protect the process in the United States and in foreign countries.

The process itself is the property of the New York Sugar Products Company of New York and Baltimore, of which Dr. Smith is secretary and treasurer, and S. F. Evans is President. An exclusive license to manufacture and sell the produce in North America has been granted to the General Food Products Company at 501 Fifth Avenue, New York City.

Oil is being consumed in this country at the rate of 436,000,000 barrels a year, while domestic production is running at the rate of only 402,000,000 barrels annually.

Tea Substitutes

By MAUD E. SARGENT

IN bygone days country-folks made many kinds of "yarb" or "herb teas," which resembled the "tisanes" still brewed by French peasants. The flavor of such compounds would probably be too medicinal for our palates, though old housewives may have been right in ascribing sundry virtues to the tea, or "Spring drinks," composed of aromatic plants, sage and thyme, mint and balm, marjoram and "catmint." The last still is popular in New England, under the title of "catnip tea," and agrimony is used for a similar decoction.

Early Herb Brewing

Ever since the days when the Boston people threw the East India Company's tea into the harbor, as a protest against the tax upon it, which led to the American War of Independence, country-folks in the Northern States have brewed many kinds of herb-teas. At first people fell back upon native substitutes through patriotic motives—the so-called "Liberty tea" was obtained from the leaves of "four-leaved loose-strife," and raspberry leaves furnished the "Hyperion-tea" which was declared by the patriots of the time to be most delicately flavored and excellent, and a first-rate substitute for Hyson, Pekoe or Souchong! Other substitutes for China tea were sage, mint, balm "thorough wort," ribwort, marjoram, and strawberry leaves and black currant leaves. The three last plants were used as substitutes for tea in our own Isles till quite recent times. Marjoram is still brewed into tea in many parts of England, under the title of "organ tea" or "organdy"—old names for the aromatic herb. In the West of England "organ tea" is often a decoction of penny-royal. Nettle tea is still a famous spring drink, and so is a sort of tea made of the bitter "muggins," or mugwort, credited of old with wondrous virtues. Sloe-leaves were another old-fashioned substitute for tea, while "cowslip tea" is quite a popular drink in some parts of the country where "Titania's pensioners" show their golden coats plentifully. Camomile tea is still used as a medicine—few could call it a pleasant beverage, any more than senna tea! Oddly enough, in Venezuela, tea is regarded as a good, but highly disagreeable, medicine. It is not, or, till quite recently, was not, to be obtained at hotels or restaurants in that country, and, made after Venezuelan fashion, it is far from being a pleasant drink. In many remote parts of Europe the belief lingers that tea should only be used as a medicine, though the habit of "five-o'clock tea" had been established in most of the larger Continental towns before the war. Probably the people of the Central Empires will be more than ever devoted to coffee as a beverage now peace is declared, and will regard tea drinking as an English habit.

Although it is scarcely three hundred years since tea, "tcha," or "tay" as the Irish peasants call it, was introduced to our Isles, we now use far more of it than any other Western country; our colonies also drink great quantities of tea, which seems to have been first imported into Europe by the Portuguese, early in the sixteenth century, though the Chinese claim to have discovered it in the eighth century.

Tea Made of Various Plants

In various foreign countries tea is made of a variety of plants besides Thea sinensis, the white-flowered evergreen shrub, which we know as "the tea-plant." In Sumatra people often infuse coffee-leaves in the tea-pot, when tea is scarce, the resultant brew is said to be very good indeed. The Tonkinese make tea of all sorts of things—the berries, leaves, wood and bark of numerous plants and trees. The Tasmanians are said to have a hundred substitutes for tea, and in Abyssinia a tea is made of the leaves of a shrub—Catha edulis. It is sold as "Arabian tea," but is in no way related to the real tea-plant. Another tea-bearing shrub is Camellina theifera, but perhaps the best known of all these tea substitutes is the famous "Matté," or Paraguay tea, made from the leaves of a sort of Ilex, or holly, which seems to have been first found in Paraguay, along the shores of the Parana, where it is still largely cultivated, but it now covers a vast area in Brazil, and is also grown in parts of Uruguay, and the Argentine, and in all these countries it takes the place of tea or coffee to a very great extent. It is most sustaining and stimulating, workmen take it with them wherever they go. It is said that in harvest time a laborer will take a good bowl of matté, or "terere," with a crust of bread before going to work at 4 a. m., and need no other food till the time comes for the mid-day meal—breakfast, in our sense, is unknown in those lands. Matté has no after bad results, does not cause indigestion, and is highly stimulating. It is odd that it has never won favor in England, in spite of several attempts to popularize it.

The "Yerba Matté," or Brazil holly, is a shrub usually attaining a height of from 12 to 20 feet, and resembles our holly, but the leaves are not spiny. They are used in two ways, in one method they are dried and powdered, and infused in a vessel—often a gourd, from which the infusion is sucked up through a perforated metal tube, and is often flavored with lemon and brown sugar, though it can be taken with milk. In the other way of serving, the leaves are not ground to powder, but are used in fine flakes, with which a few stalks are mixed. This is made like Chinese or Indian tea in a pot, and is of a green hue. A glowing piece of charcoal is often dropped into the liquid, changing it to a dark brownish-green tint; this is said to make it much stronger. Unlike our tea, it is much improved by boiling. It has one great advantage over tea—each handful of leaves will yield two excellent brewings, the second usually stronger and better than the first. Matté has no bad effect on the nerves.

In Mauritius a sort of tea is made from the dried leaves of an orchid which grows plentifully in the island, in fact there are tea substitutes in most lands.

Varieties of Tea Plant

There are two varieties of the common tea plant—Thea viridis, a large evergreen shrub, with spreading branches and leaves four or five inches long, and Thea bohea, which is of much smaller growth. Both have pretty white flowers and somewhat resemble the myrtle in foliage and blossom. Tea is largely grown in China, Japan, India, Ceylon, and of late in the Malay States, and in Natal. It does best in hilly districts, and is grown from seed. It is not till the third year that the leaves are fit to gather, after which they are collected four times a year.

The best known kinds of black tea are Bohea, Pekoe, Souchong and Congou, while favorite green teas

are Hyson, Young Hyson, Twankay and Gunpowder, and there are all sorts of blends, including mixtures of black and green China tea. Fifty years ago Indian, or Ceylon tea, was almost unknown, now vast quantities come from these dominions. Some people cannot drink Indian tea, and a good many doctors recommend only China tea to their patients, but although over-indulgence in "the cup that cheers" is undoubtedly injurious, tea in moderation is a wholesome, refreshing, and stimulating beverage, although it does not possess all the wonderful virtues claimed for it in the curious broadsheet, issued as an advertisement in 1658 by Thomas Garraway, founder of the famous "Garraway's," which may still be seen in the British Museum. This proves that Dr. Johnson is wrong in giving 1666 as the date when tea was first brought into England. He declared that it was imported from Holland in that year by the Earls of Arlington and Ossory, whose wives taught women of quality how to use it. Pepys, however, records in his diary that on the 25th of September, 1660, he sent for a "cup of tea, a China drink," of which he had never drunk before, and an Act of Parliament, in the same year, put a duty of eightpence a gallon on all tea, chocolate and sherbet made for sale.

Many writers of the seventeenth century say that tea was introduced to our Isles by the Portuguese, and that Catherine of Braganza helped to make it popular, but it was well known in London before the Restoration.

The leaves intended for black and green tea are dried in different ways. The former are placed on trays in the sun and air, and during the drying a fermentation takes place, which changes the flavor and color, the leaves acquiring a slight red-brown tinge, and a curious odor, which shows that they are ready for roasting in an iron vessel. Afterwards they are rolled by hand, to press out the juice, and are lastly dried over a charcoal fire in sieves, when they turn black. The change of color, however, is said to be due to the previous treatment and not to the action of heat. Green tea-leaves are roasted in an iron vessel directly after gathering, and are not allowed to ferment or change color. They are rolled in the same way as black tea and dried in the vessel in which they are roasted, being stirred and fanned the whole time, to hasten evaporation and drying.

Sugar and Prohibition

Effect of Prohibition of Alcoholic Beverages Upon Sugar Use

By W. D. Horne, Ph. D.

THAT there will be a direct relation between the prohibition of the use of alcoholic beverages and an increased consumption of sugar there can be no doubt. Alcohol owes its popularity to the same basic causes as give sugar its widespread use. The taste is attractive (to some people) and its consumption is followed by various physiological results considered (again, according to the individual) more or less beneficial.

Alcohol is very quickly taken up and diffused through the system, where its rapid oxidation produces a quick return of energy, with the development of about 11,200 British thermal units (B. T. U.) per pound of alcohol. Sugar also is quickly assimilated after its preliminary inversion by the digestive agents, and its beneficial effects begin to appear in half an hour, with the greater part of its energy developed within two hours. A pound of sugar thus produces about 6,944 B. T. U. As a pound of sugar (invert) gives rise in fermentation to about .42 lb. of alcohol, it follows that the dynamic energy developed in the oxidation of this alcohol will be 42 per cent. of 11,200, or 4,729 B. T. U., or only 68 per cent. of that given out by the direct combustion of the sugar in the body, without the intermediate conversion into alcohol. This indicates the gain in efficiency in the direct consumption of sugar.

The quick and enduring energy derived from a sugar diet has been amply demonstrated in numerous experiments and has been fully borne out by experience.

The growing popularity of sweetened beverages, confectionery, ice cream, etc., has followed closely upon improved methods of manufacture and better facilities for transportation. The United States already consumes annually about 350,000 tons of sugar in confectionery and 136,000 tons in bottled soft drinks.

It has been a common observation that those individuals who drink much alcoholic liquor do not care for candy. This is only to be expected, in view of the largely similar functions subserved by the two substances. It is equally evident that a cessation of alcohol consumption is likely to be accompanied by a hunger for sweets as the most nearly allied substitute.

The purveyors of sugar-containing specialties, such as candies, soft drinks, ice cream, sweet crackers, glacéd fruits and nuts, should make special efforts to present their wares in attractive and easily available forms so that their use will be even more widely popularized.

A decided extension of automatic selling devices which would offer a wide variety of sweetened delicacies at suitable prices will probably prove one of the most advantageous steps in this direction.

Canning Kitchens Come To Albania

The first culinary and dietetic school in Tirana, Albania, has been opened under the auspices of the American Red Cross, with Miss Nellie Halliday, of Cincinnati, Ohio, installed as director.

Albania is well off in fruit trees, but heretofore only two methods of conserving the fruit for winter use have been known among the natives: apricot paste, a rather indigestible and not particularly tempting morsel made by drying and hardening the fresh apricots in the sun, and "Bakia," as the fiery brandy made from plums, was called.

Providing against a rainy day, and varying the menu by canning this unconsumed food had never occurred to the Albanian mind. Neither could they conceive of any way of cooking the ubiquitous carrots, cabbages and leeks except in soup. Eggs were always served fried.

Now the Tirana housewives are revelling in the mysteries of peach conserve and plum marmalade, teaching their children to cultivate a taste for cold slaw and boiled carrots, and celebrating a regular orgy in omelettes.

Diseases of Fruit and Causes of Deterioration in Transit

By DR. O. F. BURGER,

Pathologist, Bureau of Plant Industry, U. S. Department of Agriculture

THERE are three kinds of diseases in fruits arriving on the market. At least we have tried to classify those diseases under three heads: First, those diseases which occur in the field and which do damage to the fruit in the field and are brought to market from the field, such as apple scab, peach scab and russeting of citrus fruits. These diseases are brought from the field and when the fruit is packed it looks just as it does when it is unpacked on the market.

The second type of diseases comprises those which originate in the field but which through transportation and improper environment spread and cause decay. Brown rot of peaches, and the stem-end rot of the citrus fruits are two glaring examples. There are others.

You can tell brown rot of peach in the field. Every conscientious packer or grower when he packs peaches tries to have the peach packed free from disease. That is, there are no apparent defects in the fruit. We recognize several types of infection of brown rot of peach. One, of course, is the glaring, large, brown decayed spot which appears in the field. That is always culled out. I was in the Fort Valley section in Georgia and went through some packing houses and saw a lot of brown rot coming into the packing houses. I went around to the basket after they were packed and examined them and found none of the infected peaches packed.

Other Types of Infection

Then there is another type of infection. That is where the fungus has gained entrance to the fruit, but is merely microscopial and can only be determined by the microscope. So we cannot say those are not packed. There is no doubt but that fruit is packed which is infected, but when we say that a fruit must be sound when packed, we mean that there must be no visible defect. If we take the theoretical proposition which we suggested, that the fungus has already entered the peach but that the infection has not enlarged to such an extent that it is visible to the naked eye, when that peach is packed and the proper environment arises, that is, if the temperature goes over 50, that peach is going to decay on the way to market. If it is kept under 45 it develops very slowly, to such a slight extent that in the length of time it would take for peaches to come from the Georgia fields to New York market the decay would be negligible.

Effect of Car Temperatures

Then there is this other type which cannot be called infection, but where the spores of fungus merely hang to the outside of the peach. When the temperature goes up in the car and the moisture is there, that fungus spore, the seed body, will germinate on the peach and will decay during transportation. We found that if we kept the fruit under 45 the fungus would not grow, but just as soon as the temperature gets over 45 to 50 it begins to grow, and when it gets over 50 the losses are great. We have found from our market reports that where a temperature is taken of the product as it arrives on the market, our temperatures generally are taken at the door, at the lower layer and at the top layer, there generally is a difference of ten degrees in the car. When that top layer does not exceed 45 you have very little decay. We have there a curve which shows that the greatest amount of rot occurs with the highest temperature. There are a lot of cars arriving on the market with the temperature showing all the way from 60, 70, 80 and higher, and when you get them with the higher degrees of temperature you have a greater amount of rot, sometimes from 75 to 80 per cent.

The third class of diseases consists of those which arise during transportation and are induced by the methods of transportation and marketing. I have in mind now the blue mold of citrus fruits that arise during transportation, and blue molds of almost all the fruits. Blue mold is one of the most ubiquitous fungi we have to deal with on the market. It attacks almost all fruits when they are injured, but I do not know that it has ever been shown that blue mold is able to enter an unpunctured skin. The fruit to be affected must have a punctured skin.

Rhizopus rot is considered a transportational disease, that is, rhizopus rot of peaches and berries. That also occurs when the temperature gets from 45 to 50. The black rot of pineapple, which is produced by the fungus *thielaviopsis paradoxa,* is also a transportational disease.

If we could only take some of you who are not used to seeing pineapples come on the large markets in New York and Chicago, and show you that 75 to 80 per cent of a lot of those cars are culled out on the trackside, you would then see why pineapples cost all the way from 35 to 50 cents apiece. You are paying for two pineapples which are lying on the trackside somewhere. The difficulty with the way in which the pineapple is handled is this: In Cuba they put enough in one car to ship across to Key West and fill two cars. There is the heat of the tropical sun and then the heat sent out by the respiring pineapple, and you might guess what heat there will be in such cars of pineapples. The temperatures will run all the way up—well, the sky is the limit, I think, in some of those cars. Then the car is split and two cars are made at Key West and are sent north, and by the time they get here 75 to 80 per cent are rotten. That fungus does not grow under 45 degrees.

Experiments in Fruit Shipping

We have been carrying on some experiments with the United Fruit Company, shipping fruit all the way from Costa Rica. They were sustaining about a 50 per cent loss in their shipments, even more, and they were putting those pineapples in the hull of the boat, where they were carrying the bananas. The bananas were generally kept at 50 to 55 degrees. We constructed an ice box and put it on the deck, strapped it down, and kept the temperature at 45 degrees F. The pineapples in the hull of the ship with the bananas sustained a loss of 50 per cent while on board ship, in our ice box, where the temperature was kept at 40 to 45, the loss was something between 3 and 5 per cent.

So it seems that perhaps there might be something done in the way of getting some of those fruits refrigerated which we are bringing into this country. Perhaps quite a

lot of those things that we are trying to do are impossible. Perhaps we are trying to grow some of this stuff so far from our markets that we want to blame somebody along the line for the great loss. I am just throwing this out as a suggestion.

Task for State Market Bureau

I want to cite an instance. A gentleman in Texas grew spinach. He put it in a hamper with a chunk of ice on the top and put it in an express car. When it arrived on the market it was all slimy, soft, rotten, not fit for the horses, but only fit for the dumps. I think it is up to the men of the market bureaus of the different states to try to give such information of the conditions on the market as will help the farmer to get his stuff here in good condition. Remember that fellow is spending fifty-one weeks in the year trying to raise his crop, and in one week he has got to market that crop, and he either makes or breaks in that one week. Don't you think that he ought to be fifty-one times more careful during that one week than he is in any other week of the fifty-one of the year? The State Marketing Bureau has the task of showing the farmer that he has got to take fifty-one times more care during that week than during any other week throughout the whole year. You know that sometimes there is less care taken that one week than at any other time.

I was down in Maryland watching them pack peaches. You know Maryland is only a couple of hours ride from our big markets. The man I was visiting thought he ought to get his stuff delivered in good condition. Sometimes I have seen those fellows who are closest to the market take the greatest chances. That is a fact. I was down there with that packer and he said, "Now you have seen my packing shed. You have been in Georgia. What do you think of my packing shed?" I said, "I am sorry but I am afraid that if you lived in Georgia you would not market one peach." He was taking no precautions whatever. Now we must help those fellows and show them where the faults are in their work, and the precautions that must be taken.

Type of Inspection Needed

Just one word about the inspection service. We think an inspector needs to be a man who knows the trade and a man with a backbone, so that the trade cannot bully him. When he says a thing is so, it is so. Second, we want men who are able to assimilate some pathological knowledge, a man who is able to give the department the facts as to what the diseases are, as they come on the market. Many times those inspection reports which we write are taken as a basis for a settlement of claims. Not long ago some inspection reports on peaches were taken as a basis of claims. Consequently we want that man to be a conscientious man who takes his work seriously, not the schoolboy type who gets to the cars and jogs over the stuff, but a man who realizes that there are thousands of dollars at stake, and that he must be accurate. I believe the thing we need most is men with backbone who are untiring and who will stand firm and give us the facts, because the carrier and the receiver want the facts.

Connected with this market inspection, our experience shows that it is necessary to have pathologists engaged with the market inspectors, not only to describe to them the diseases as they come in, but also for investigational work. The last word has not been said on transportational diseases. We are finding out new things all the time. Things which we thought were so are relegated to the waste basket by now, and it takes constant hard plugging to get all these facts. The work cannot be done in five minutes, nor in ten, nor in a day, nor in many days. Much of the work will take years.

We must have men behind us who are able to stand between the public and the pathologist and let him work on the special diseases, so that he will be able to give the inspector the scientific facts.

If marketing is based on gambling, the scientist cannot help. We are on the outside looking in. I want you to understand that. If marketing is just simply taking a chance we cannot aid. If, however, this system of marketing is established on a scientific basis, I believe that the pathologists can step in and fill a gap in bettering the transportational conditions.

Story of the Potato

Thomas Carlyle once declared that "the biggest gold nugget ever found was never half so useful to the world as one good mealy potato." Yet the potato had a hard fight for recognition. It is probable that the potato was originally an American plant, but its use became universal through its adoption as an article of food in Europe.

There are many claimants for the honor of its introduction. Some say that it was the naturalist Clusius who planted the tuber in the Botanical Gardens at Vienna in 1588, but the Spanish say that the plant was brought from South America about 1580. They assert it was taken from Spain into Italy and Belgium, and that it was from a Belgian that Clusius obtained his roots.

There are other stories, however. Sir John Hawkins on returning from Santa Fe in 1563 had with him some potatoes, but it is more than probable that they were yams or "sweet potatoes," the same that Columbus described as "not unlike chestnuts in flavor." Sir Walter Raleigh is said to have got the real potato from Virginia in 1586, but his claim is disputed, and it is asserted that the genuine "Irish" potato is a native of Chile.

Tradition has it that Sir Francis Drake made a present of potato roots to Raleigh, who planted them in his garden in County Cork in 1594, but it is not until 1610 we have any authentic record of potatoes in Ireland. In 1597 a book on herbal medicine was written by Gerard, the frontispiece to which was a portrait of the author holding a potato in his hand.

When potatoes were first used for food it was the "seed" or "apple" that was used, and it was some time before the tuber was found to be the most delicious food. Up to the end of the seventeenth century the potato was out of the reach of people of moderate incomes. It is recorded that in 1662 potatoes were sold at one shilling (25 cents) a pound in the London markets, but the sale was small because so many people believed that the potato caused leprosy and fever. Others declared that they were endangering their souls if they ate the potato, since the tuber was not mentioned in the Bible.

It appears that nothing or little was known of the potato in Scotland until long past the middle of the eighteenth century.

There is no doubt that the Irish were the first people to recognize the value of the potato as a staple article of food.

Metamorphoses of Food

By B. A. BENNETT

THE stomaeh is a mighty magieian. Indeed, it may well be said that we are ruled despotically by our digestive apparatus. For a telling example of this bitter truth let us refleet on a certain Ameriean, worth his millions, who dared not touch any food or drink, excepting—milk!

No matter what we eat—humans and animals alike—the objeet sought after is to turn the food into blood. The various raees and nations have strikingly different modes of nutriment.

Wonderfully diffcrent are the means men have hit upon for preparing food, to make it easy of digestion and pleasant of taste. In these they have been guided by instinet and oeeasionally enlightened by knowledge. But all means point to the same end. Climates differ, modes of life differ, tastes differ, prejudices differ.

The Greenlander, gorging himself with pounds of seal's flesh and train oil, would look with wondering contempt on thc Hindoo distending himself with riee and rancid butter!

The Abyssinian, who likes his steak raw, eut from the living animal, would hardly comprehend the Persian's faney for a steak stewed into strings and disguised in brown gravy.

The Neapolitan, refreshing himself with juiey eoeomcro, might well sniff at the Boche's exhilaration over raw pig meat!

The Greeks were at all times less of gourmets than the Romans. In Homer's time their appetites were no doubt heroie enough, and huge havoe was made on swine's flesh when the ehanee was afforded, but even on prineely tables nothing more recherehé was found than beef, mutton, pork and goat's flesh, always prepared in the same way. Nor even among the later Greeks was there any expenditurc of ingenuity in cookery.

Plain roast, with olives, lemons, figs, apples, pomegranates, pears, melons and a few vegetables seem to have made up their list of eatables; if we add to the roasts an oecasional dog or donkey and a rabbit or hare, the list still laeks mueh in the way of variety.

The early Romans, before their epieurean era dawned, lived simply on a diet of pulse, bread, fruit and vegetables. Very little meat was eaten, and the ehief beverage was a mixture of winc and water. Then eame beer, and then, as the eonquest of the world brought them more and morc into contaet with various eustoms, the list of artieles and the modes of preparation beeame longer and more various.

Then followed the seareh for rarities. The livers of nightingales, the brains of flamingos, the tender parts of peacocks, wild boar, oysters, blaekbirds, larks, deer, hares, spiees from all eountries, and ingenious forms of pastry—these were all dressed up in a thousand different ways, so that Apicius eould have ten books of reeipes!

The Egyptians of earlier days baked bread from the meal of the lotus seed, distilled oil from olives, and brewed beer from barley.

The immense riehness of the soil, whieh in the Nile delta gave four crops a year, furnished abundant vegetable foods, and the Nile an overwhelming plentitude of fish.

Upon fish, lotos, garlie, melons, and dates the poorer elasses ehiefly subsided.

Those who eould afford flesh prcferred the quail, goose and beef; very often the meat was simply salted and eaten without further eookery. Despitc these faets, Egyptian eooks displayed mueh ingenuity in their prowess, more partieularly in the preparation of no end of varieties in pastry. Numerous also were their diffcrent kinds of bevcrages. At their banquets a repulsive custom was to earry around a eoffin containing a eorpse! This was shown to eaeh guest, as a striking reminder to "eat, drink and be merry for tomorrow we die."

The Egyptians sat at tables and used a wooden or ivory spoon to aid their fingers.

The Iberians were almost exelusively animal feeders. Of eookery they had but the simplest ideas, and simply roasted or raw meat with wine or mulsum summed up their idea of a banquet.

The Lusitanians only drank water and ate seareely any flesh but that of goats.

The Gauls were equally indifferent to vegctable food, and preferred swine's flesh, roasted, saltcd or smoked. They drank wine, milk and a barley drink, but wine was their especial favorite, beeause it intoxieated them. Maidens and youths waited on them at meals, and the men sat on the skins of wild beasts.

The aneient Germans were huge animal feeders, their favorite delicaey being the flesh of swine, eaten raw, swilled down unstintingly with huge quantities of beer or wine.

As a striking eontrast the Jews have ever been fastidious and eleanly in their diet. It may be averred that none are so partieular regarding what they eat and their eooking utensils as the Hebrew raee. Many meats are forbidden. Notoriously so, of eourse, is pork, but others are the flesh of animals whieh have died a natural death or beeu killed by another animal. Also, some parts of the fat and flesh of an animal are strictly forbidden. A Jewish menu exeludes any meat eooked in milk, hares, all reptiles and many kinds of fish. In former days the flesh of eamel, donkey and dogs was a forbidden delicaey.

The Hindoos were and are very simple in their diet. Their favorite dish at onc time was riz au lait, a similar mixture to our familiar rice pudding, but with eardamoms added. Intoxicating liquors were forbidden. Nevertheless, beer, meth, barley wine, palm wine and eoeoa milk were seeretly indulged in, and, in spite of religious scruples, mueh wine was drunk.

Of the Persians we have not mueh knowledge of the food of the people, for only of princely banquctings are reeords to be found. These were of animals, roasted whole, with a variety of vegetables and fruits, served with wine and water.

The ancient Arabs were often ealled after the foods they ate; for instanee, the flesh-eaters and root-eaters were named respeetively "Rhizophagists" and "Kreophagists." Likewise the elephant-eaters, croeodile-eaters, ostrich-eaters, and loeust-eaters all earned their individual names. Except the pig, whieh the Arab regards with horror on aeeount of its dirty feeding habits, almost all animals are welcome to them.

Thus it will be seen that mueh depends on eustom and prejudiee in diet; also elimate and mode of life. It is in vain to say all men are alike, and therefore must be equally

(*Continued on page 35*)

Causes of Spoilage in Canned Goods: "Swells," "Springers," "Flat Sours," and Microorganisms Present

"IT has long been known that the acids of canned fruits dissolve more or less tin from the container, the amount depending partly on the age of the product and the temperature of storage. It is also well known that some foods having but a slightly acid reaction, such as pumpkin, string beans, and shrimp, attack tin to a considerable extent. This has been shown to be due in some cases at least to the presence of amino bodies in the food," says W. D. Bigelow.

With regard to "swells," "springers," etc., Zavalla, in his recent book quotes the following (from Bulletin No. 151, U. S. Dept. of Agriculture) by Dr. A. W. Bitting:

"Spoilage may result from insufficient processing, defective containers, or the use of unfit material. These losses are generally classed under the heads of swells, flat sours, and leaks. Formerly, losses were heavy at many factories, but these are becoming less each year, due to a better knowledge of what is necessary in material, handling, and improved appliances. More attention is paid to testing for bacteria, and greater care is taken in obtaining accurate thermometers and gauges, automatic temperature regulating devices, and time recorders, so that little is left to the judgment of the processor or helper.

"Spoilage due to insufficient processing is generally divided into two classes: swells and flat sours. In the former there is generation of gas, causing the ends of the can to become distended; in the latter, the contents of the can are sour, but there is nothing in the appearance of the can to enable the customer to determine the condition until the can is opened. Swells are generally due to under-processing good material, while flat sours most often result from giving the regular process to material which has been allowed to stand for some time, such as peas remaining in a load overnight, or corn left in a car or in a pile until it begins to heat. The raw material may show no evidence of fermentation on superficial examination, but this condition frequently exists under the conditions just cited. Swells are, therefore, more likely to be associated with rush operations, and flat sours with an overstock or delay in getting at the raw material. It is not intended to give the impression that swells and sours may not occur under other conditions, such as changes in the consistency of the corn, nor that swells may not occur in material which has stood, and sours result from under-processing, but only to state a general rule.

"Swelling or souring may take place shortly after processing, or the spoilage may be delayed for weeks or even months. Swelling is more likely to occur and be detected early, while souring is apt to be delayed, though it may occur early. The heat used in processing may have been insufficient to kill the vegetative forms or spores, but may have injured them to such an extent that time was necessary for recovery and subsequent development. A microscopic examination of the material a few days after processing, or of the incubating cans during a short period, might not show anything wrong. It is only by incubating samples for a number of days that early recognition may be made of some cases of spoilage, or possible spoilage. The canner often sends his goods from the factory with full confidence in their condition, and it is not until after they have been in the broker's warehouse or upon the grocer's shelves many weeks, or even months, that he becomes aware that anything is wrong. The spoilage may amount to only one can to the case, or the percentage may be high, but in either event the goods are rejected with loss.

"Spoilage from the use of improper material, *i. e.*, material which has been allowed to stand until fermentation has begun—is generally more or less sour to the smell and taste, but is sterile, the heat of processing having killed the bacteria.

"Can leaks may occur along the side, 'seam leaks'; at either end, 'end leaks'; at the cap, 'cap leaks'; at the tip, 'tip leaks'; or may be due to defective tin plate. Can-making has reached such a point of perfection that manufacturers guarantee all above two to the thousand. These imperfect cans are usually due to the solder not making a perfect union, or to defects in crimping or double seaming. With the use of the automatic canning—and tipping-machine there are fewer leaks than formerly occurred, when the work was done by hand; leaks in sanitary cans are generally due to poor adjustment of the rollers. Leaks are recognized, as a rule, by inspection in the hot bath, few getting into the wareroom.

"Leaks may be very small, even microscopic in size and, therefore, difficult to detect, or pieces of the can contents may be driven into the opening and seal it for the time. Leaks invariably cause swells. A check on spoilage can be kept by placing a few cans from each days run in a room kept at a high temperature (98 degrees), as these will incubate much more rapidly than if kept in a storeroom.

"There are two conditions known to the trade as 'springers' and 'flippers.' A springer is a can the end of which will bulge slightly after a time, but on opening there is found neither gas nor spoilage, though the cans have the appearance of being swells. This condition has been found to be due to overfilling or to packing cold. Such goods, when placed in a warm grocery will budge, due to the temperature. A flipper is a springer of such mild character that the head may be drawn in by striking the can on a hard object. It is always possible to tell a swell from a springer by the use of a microscope, as in the former there will be a large number of organisms, while in the latter there will be very few.

"A 'springer' is a can whose ends are more or less budged, owing to pressure from hydrogen generated as a result of the chemical action of the contents on the metal of the container, or because the can was overfilled or insufficiently exhausted. . . . It is ordinarily taken for granted that the hydrogen thus generated is due to the action of the acid of the fruit on the tin. I think this is a mistake. I think it results in large part, at least, from the action of the acid on the iron and that the amount of hydrogen liberated in the can is usually a measure rather of the iron that has been dissolved than of the tin. The metallic taste in a

product of this nature is certainly due to dissolved iron. Of course, where any great amount of iron is dissolved in the product, the tin is also dissolved, but passes largely into an insoluble form.

"This question has been studied for several years and in several laboratories. Exhaustive investigations, devoted to this point and to the kindred question of the action of the foods on the container, have been conducted (involving the expenditure of over $25,000), and the work is now being broadened and increased. Considerable progress has been made, but the solution is not yet in sight.

"In this connection I wish to point out the relation of springers to certain other difficulties of the canner. The natural acids of the fruits attack the container, dissolving the iron and carrying tin into the food and into the liquor, where it is largely, often chiefly precipitated in insoluble form. This liberates hydrogen, which directly causes springers. While in the nascent state this hydrogen bleaches many of the colored fruits. When liquor is used in an attempt to prevent this action pinholes often result, leading to the spoilage of a considerable percentage of the pack, and with some products an undesirable flavor is imparted by the lacquer. These difficulties all come from a common cause and will only be overcome by understanding and removing the cause. This statement, however, does not include the solvent action on the metals of the can of amino bodies in certain foods, such as shrimp, pumpkin and asparagus. (U. S. Dept. of Agr., Bureau of Chem., Cir. 79.)"

As to the natural organisms present on fruits and vegetables, Zavalla says:

"Our knowledge of the normal structure of most fruits, vegetables, and other foods is fragmentary and not classified so that it is available for use. Possessing neither an understanding of the normal structure of the product nor the normal flora present under different conditions we have a very poor basis upon which to make a start."

Another writer says:

"It is a lamentable fact that our knowledge of the organisms present on most products is of an elemental character, and our knowledge of their thermal resistance is based largely upon the deductions from factory practice rather than upon any direct experiments. Only a very few of the organisms have been studied systematically."

Further, Zavalla writes:

"In general, organisms that occur in spoiled cans of fruit differ from those in spoiled cans of vegetables by being more easily killed by heating. The organisms in spoiled fruit are principally yeasts and molds, all killed below the temperature of boiling water. Those in swelled cans of peas, asparagus, etc., are usually of types of bacteria killed above the boiling point of water, and hence require heating under steam pressure. Their resistance is due to formation of spores, or 'seeds,' which are very hard to kill. If these are in the cans or on the vegetables, etc., they will multiply in the cans and spoil the vegetables if the temperature has been insufficient or the time too short.

"Fruits contain a great deal of fruit acids that aid in sterilization or killing the germs by heat; vegetables are usually almost free from appreciable amounts of acid, making sterilization for this reason difficult. These facts explain why it is necessary to use extra precautions in sterilizing vegetables, and why fruits are easily sterilized. It also explains why spoilage of fruit is usually due to leaks through which yeasts, etc., gain entrance while swelling is often due not to leaks, but to growth of bacteria that were sealed up in the cans and survived cooking. In sterilizing fruit, then, one of the principal aims of cooking will be simply to render the fruit palatable and of the proper texture. If this is accomplished at the boiling temperature, the yeasts, molds and bacteria on the fruit will be killed. Vegetables, on the other hand, because of the resistant bacteria spores, must be cooked under pressure, not with the idea of cooking or rendering them palatable primarily, but with the idea of killing the bacteria that cause swelling and souring. If pressure cookers are not available for vegetables, repeated sterilization at 212 deg. Fahr. (the boiling point of water) may be used; that is three heatings on three successive days. The effect of the heating is to injure or weaken such spores or organisms as are not destroyed in one operation, and by repeating a second or third time at intervals the desired result is accomplished at the boiling temperature."

To Ride the Storms

All About Pies

By M. WESTAWAY, L. C. A.

ONE'S earliest notions of this dainty dish go back to nursery days, and are usually associated with a self-satisfied youth who pulled a plum from a certain pie. Jack Horner should certainly not be received in any well-regulated nursery, for those who follow his example, whether in a literal or metaphorical sense are sure to be overtaken by misfortune.

No! Fingers must never be put in a pie, particularly in the pie belonging to another person, for thereby one gains the character for being a busy-body and meddler, and may call forth such an expression as that in "Henry VIII."

"The devil speed him! No man's pie is freed
From his ambitious finger."

Next to the nursery plum pie come the rudiments of learning in the alphabetic rhymes, commencing, "A apple pie," etc. Later in school life the apple is associated with a bed, for few people go through life without finding themselves on at least one occasion unable to get more than halfway to bed, at which point there is always an unpleasant interruption in the shape of a clothes brush. Such a bed is not at all suggestive of a toothsome culinary dainty, so one is ready to believe the etymology supplied by the grammarian, that the expression is a corruption of the French "nappe plicc," meaning a folded cloth or sheet.

Similarly, "apple pie order" may have its origin in the fact that the first apple pies were made with fruit enclosed in a cover of pastry, which produces what is known as a "turnover." It seems more likely that the expression is a corruption of Alpha—Beta, or even of "cap-à-pie," so that anything described as in apple pie order has the regularity of the alphabet, or the armour of a cap-à-pie knight.

One searches the modern cookery books in vain for a recipe for "Humble pie," and of all pies that may be eaten, the partaking of this particular pie is the least desirable. No ancient cookery book is complete without a recipe for humble (sometimes spelt umble or numble), pie, and thereby hangs a tale. In olden days when stag hunting was the chief form of sport, the produce of the chase formed an acceptable addition to the larder, and like the farmhouse pig, none of it was ever wasted. The haunch and prime parts of the venizon, were served as roast meat for the gentry, while the interior parts of the stag's anatomy were well seasoned and made into a pie for the servants and retainers of the house, who thus in a very literal sense were made to eat humble pies, since the viscera of the stag is always known as the humbles.

Indeed pigs of old seem always to have had some kind of meat for their contents. Even mince pies, which are now always served as a sweet course to a meal, were in their original form made of meat finely shredded and sweetened with honey and flavored with spice. The mince pie is not without its interesting story, for in very early times they were served only at Christmas time and in a symbolic manner. The crust was shaped to represent a cradle, which went under the name of "a coffin," and the highly spiced contents were symbolical of the offerings of the Magi to the Christ Child.

The development of the pie is not without interest. As soon as the feeding power of cereals and pulses became known, the coarsely crushed seeds were steeped in water, and when heated, gave a kind of gruel, or, as in the dish of red lentils for which Esau sold his birthright, was known as a "mess of pottage." With less water and with a baking on the hearth or in the sun, cakes, such as those of which mention are made in the Old Testament, were produced. Then the ingenuity of man, or, perhaps, woman, was given full play. At first it took the form of moulding the mass of paste into various forms. Then someone was possessed with the brilliant idea of hiding pieces of meat inside the crust so as to be a surprise to those who ate thereof, and thus we have the genesis of the pie.

As was mentioned before, ancient pies seem always to have had meat as contents. A cookery dictionary of over 200 years of age, which is in the present writer's possession, contains under the head of pies (then spelled Pyes), the following list: Artichoak, carp, calves-foot, chicken, egg, hare, lamb, lumber, (which is really our old friend humble pie) pork, potato, pullet, pigeon, salmon, and veal, and there is a foot-note to the effect that Pyes of young turkeys, ducks, partridges, pheasants, woodcocks, large rabbits, young rabbits, green geese, teals and others are usually made after the manner of pullet pye.

The nearest approach to a sweet pie is that known as an olive pie, which may be quoted for the benefit of anyone in need of something rare and strange. "Take veal or mutton, and cut it into thin slices, hack them with the back of your knife, and spread them abroad, then take strawberry leaves, sorrel, violet leaves, endive, sage, parsley, spinage, savory, marjoram, and a little thyme. Mince these small with the yolks of hard eggs; add to them half a pound of currants, nutmeg, pepper, cinnamon, sugar and salt, some minced raisins, gooseberries, and dates minced small; mingle these together and throw them on your slices of mutton or veal, then rowl them up, and put them into a pie; lay on the top of them some dates, marrow, large mace and butter; close it up when bak't liquor it with verjuice, sugar, and butter, and so serve it up." One might wonder why its name, were it not for its resemblance to "beef olives" which are likewise guiltless of olives.

Fruit baked in a pastry case usually went by the name of tart, and the same distinction holds good at the present day, no matter whether the fruit is wholly enclosed, or merely contained in a pie dish and covered with pastry. In America there is no such distinction in name, although meat pies are usually baked in a pie dish, and a fruit pie between layers of pastry.

"The pie is an English institution," says Mrs. Beecher Stow in "Oldtown," "which, planted on American soil forthwith ran rampant, and burst forth into an untold variety of genera and species." It seems probable that the recipe for making pies was taken to America in the *Mayflower,* but certain it is that as soon as the early settlers discovered the greater variety and abundance of the fruits indigenous to their new home, they promptly turned it to such good account for the filling of pies, that pies of all kinds came to be regarded as the national dish. New England claims to be the home of pies, and there it was dwelt the man whose form of grace was to thank God that he could afford pie for breakfast every day.

Why You Need Variety in Your Food

PRACTICALLY every one has had experience of the distaste —and even, in extreme cases, the nausea—produced by eating or attempting to eat the same sort of food every day. Things are better in that way than they used to be, but the diet of some is still an unpleasant memory. For example, the once-monotonous menu of the soldier, the sailor and the prisoner has had to be abandoned because it was found that the men did not thrive upon it.

Give a man the same food every day, week in and week out, and it will produce first disrelish, then impaired digestion, and finally malnutrition, until, like some of the foolish "bird-eating" champions of "a quail a day for 30 days," he may actually die of starvation while consuming a quantity of nutriment greatly in excess of that required to support life.

Why this should be so has long been a puzzle to the physiologists, but an answer has lately been found to this and some other cognate questions by a French scientist, M. Javillier, one of the assistants at the Institut Pasteur.

Professor Javillier has found that, after accounting for all the carbohydrates, protein, water and the rest which the food experts say are all that are necessary to support life, there remains a trace of certain unfamiliar but by no means rare minerals, such as fluorine, boron, iodine, manganese, arsenic and zinc, and that these can be recovered by appropriate means from the ashes of human bodies of clay when laid aside by death. Their occurrence therein is at once too regular and too unvarying in quantity to make it possible that they are there by accident, and it can therefore only be concluded that they play some important part in the functioning of the whole organism. What part this is may be judged from the different organs in which they occur. Fluorine, for instance, is most abundant in the enamel of the teeth, the blood and the organs of excretion, while relatively scarce in the muscles. Arsenic is present, according to M. Armand Gautier, another French scientist, in all the tissues of the human body and other animals, and perhaps especially in certain of the respiratory organs and the thyroid gland. Manganese, zinc and the other metals are found chiefly in the bones and the skin. These facts have long been known to students of science. Experiments in progress at or under the directions of the Institut Pasteur in Paris have carried their significance many steps further.

As the burning of human bodies and the subsequent analysis of their ashes still present many difficulties to civilized people, it occurred to the French savants to experiment with vegetables; and then a startling fact emerged. As no means of manufacturing the elements in question above numerated in vegetable organisms could be presupposed, it was thought convenient to grow the plants needed for experiment in soil already impregnated with them; and it then appeared that the quantity of mangenese, zinc and the like recovered from their ashes exactly equalled that put into the soil. Hence it was plain that they underwent no change in their passage through the plant, nor was this all. The plants so treated grew and increased with such rapidity as to prove that their powers of assimilation of the food otherwise supplied to them were many times multiplied by the mere presence of the strange substances. Plainly these first operated not as food to the growing plant, but as the cause of this last deriving more nutriment from the soil and the air than it would otherwise do. The same process may by several arguments and proofs be shown to take place within the bodies of animals.

"The practical outcome of these experiments," says one authority, "is that an answer is given by them to many questions that have long been puzzling people interesting themselves in such matters. The plant world turns out to be the main source from which these metallic and other 8—Am. Food Jour. Grunewald 8-6 elements pass into the human body, and thus we have an explanation of the profit which this last derives from the consumption of vegetable food quite apart from the comparatively slender number of calories derived from its ingestion.

"Moreover, the fact that the infinitesimal doses of homeopathy do occasionally—though by no means invariably or even often—effect cures is thereby explained. But, above all, the necessity of varying our food daily so as to increase our chance of taking into our system these mysterious elements which act, as it is called, 'by presence,' may be increased. Some of these days it may be convenient to show what foods contain the most of them and in what proportions. But that is 'another story.'"

More Violators Fall Afoul of Pure Food and Drugs Law

Fifty manufacturers and dealers have discovered that the food and drugs act, enforced by the United States Department of Agriculture, is an exceedingly live regulation. Among the 51 misbranded or adulterated articles appear many varieties of products not ordinarily thought of as coming under the jurisdiction of the act.

Corned beef cases, so marked as to indicate that the contents complied with the requirements of the United States Navy, when they did not; eye salve that consisted principally of zinc ointment; egg noodles in a package marked "8 ounces" in large letters, and "6 ounces" in small, indistinct characters, and which product proved to contain very little egg at all; canned salmon that was really putrid and decomposed; gelatin, so marked, which the chemists found to contain glue and other added and poisonous materials; and rice bran heavily adulterated with rice hulls instead of bran, are among the items mentioned in the announcement. Many others indicate the extensive nature of the work carried on by the Government in protecting the public health.

Increasing Home Efficiency

Increased home efficiency is one of the popular projects in the counties in which home demonstration agents are maintained by the United States Department of Agriculture and the agricultural colleges. Last year 166 counties in the North and West carried on county-wide campaigns for increased home efficiency, and 1,077 farm families in the same territory were assisted during that time in rearranging farmhouse or kitchen as an important first step in efficient housekeeping.

Fill the Can Full

Food Officials Explain How Drained Weight Specifications Help Canner Standardize Quantity in Can

"FILL the can as full of solid food as is practicable by the best commercial methods without impairment of the quality or appearance of the product," is the advice Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, United States Department of Agriculture, gives to inquiring canners who state that they can not in some instances reach the drained weights published by the bureau. "The can that is as full of solid food as is practicable and correctly labeled will meet the requirements of the pure food law with reference to fill, will promote fair trading among canners and will win the confidence of the trade and the consuming public."

Furthermore, according to Dr. Alsberg, by following such practice the canner will find in nearly every instance that his cans average in quantity very close to the drained weights specified by the bureau. In the relatively few instances where there is material variation, it will be found that either there is some variation from the normal in the density of the product or of some other factor affecting the drained weight, or too little solid food has been put in the can. The canner knows whether or not he is filling his cans as full of solid food as is practicable, and the bureau specialists by an examination of the contents of the can, supplemented by inspection reports on the cannery and comparison with data regarding variations which have been collected by an extensive investigation in all parts of the country, can determine whether the shortage is due to variations from the normal in the character of the materials or to slack-filling.

Variations From Specified Weights

The food official does not use, and the canner need not use the drained weights specified as an iron-clad rule from which there can not be the slightest variation. The specifications need not be treated with the exactness with which the carpenter uses his measure in determining the width of a doorway, but may be used rather as the locomotive engineer uses the minimum mark on his steam gauge to warn him that when the steam pressure falls to a certain point he should give attention to his power in order to prevent his train from falling behind its schedule. It may be that the conditions of grade and load are such that no more steam is necessary, but when the indicator points to the minimum mark set for the engineer's guidance it is time to assure himself on this point or call for more steam. So when the canner finds his drained weights falling below the figures set, he should assure himself that it is not because of slack-fill. If it is due to natural variations which he can not control, no further attention need be given the matter, but if it is due to slack-fill, as in most instances it will be, the canner is in a position to correct his practice before he collides with the food official.

Specified Drained Weights for Guidance of Inspectors

It became necessary for the Bureau of Chemistry to determine for the guidance of its inspectors and analysts what the drained weight should be for various fruits and vegetables when put up in accordance with the best commercial practice in order to enforce Food Inspection Decision 144, which among other things provides that the can should be as full of food as is practicable without injuring the quality or appearance of the contents. When is the can as full as practicable? How will the inspector in Maryland and the inspector in Indiana act uniformly in this matter? To answer these and other pertinent questions the Bureau of Chemistry made an extensive investigation in which it examined thousands of cans of fruits and vegetables put up in different factories under a great variety of conditions. The data obtained were compiled and studied and figures obtained which represent what is a fair indication of the drained weight in the properly filled can under average conditions in the country as a whole. When it is found that a pack varies materially from these figures, it is an indication to the inspector that an investigation should be made to determine whether the variation was due to natural causes or to slack-fill. A variation below the amount specified always indicates that there may be slack-filling, but that fact alone does not establish slack-filling.

The figures on drained weight were published as they were completed for the information of the canning trade. If a canner finds that the drained weights of his products are running lower than the weights specified by the bureau, it is an indication to him that either he is slack-filling or that there is something abnormal in his product or the conditions under which he puts it up. He generally knows or can easily determine whether he is slack-filling or not.

Standardized Weights Aid Industry

It is essential that the quantity of solid food in the can be standardized in order to promote fair trading. Recently the food inspectors found a pack of peas that were slack-filled approximately eight per cent which, on the quantity of that pack, represented a difference of several thousand dollars in the cost of the peas to the consumer. It is apparent that the canner who fills his can as full of solid food as practicable will have difficulty in competing with the canner who slack-fills. While the food official is primarily interested in the full can for the protection of the consumer, he is also interested in promoting fair trading among the canners. Slack-filling is demoralizing to the trade and inevitably reacts unfavorably upon the industry which tolerates it.

The Bureau of Chemistry recognizes that there are natural variations in conditions which will cause variations in the amount of solid food that can be put in the can. Announcements to the trade giving specifications for the drained weight of different products have in most cases contained a statement to the effect that some variations are to be expected. Much attention has been given, and is now being given, to a study of the factors which cause variations and the relative effect of each. The specialists can now determine in practically every instance whether a variation from the drained weight specified by the bureau is

due to unavoidable conditions or to slack-fill.

Variations Indicate Slack-Filling

The variations in the quantity of solid food that occur in the same kind of product put up by different canners is not in most instances due to varying conditions beyond the control of the canner, but is generally due to the fact that some canners habitually fill the can as full as practicable, while other canners either intentionally, or by the practice of improper methods of filling or factory procedure which can be corrected, continuously slack-fill. Each canner who finds his drained weight running lower than that of good commercial practice, as represented by the bureau specifications, should find the cause as a matter of self-protection and of fair trading, if he does not already know it, to assure himself that the variation is not due to some fault of his methods which he may have overlooked. The assumption of some canners that a drop in the drained weight below the bureau specification is always due to varying conditions beyond the control of the canner is untenable in the light of the fact that other canners in the same territory, with similar conditions of raw materials and finished product, with no variation of density in the food or the liquid or other essential factor, are meeting the specified weights.

Inspectors of the Bureau of Chemistry have been instructed to give special attention to this matter in making inspection of canneries during the current season, and to render all possible assistance to canners in locating the cause of variations from the specified drained weights.

Specifications for drained weights for the following products have been published: Pitted and unpitted cherries, peaches, lima beans, pears, spinach, Swiss chard, beet tops, sauerkraut, green peas, wax and refugee beans. Specifications for the drained weights of other products will, when deemed advisable, be published as the work on such products is completed. Copies of the specifications issued to date will be furnished upon application to the Bureau of Chemistry, United States Department of Agriculture, Washington, D. C.

Catching Up with a "Ham-Man"

WHILE in Cle Elum, Saturday, May 22nd, on a tour of inspection and for conference with the city officials and citizens regarding their putting on city food inspection, I sauntered through a carnival grounds, which was much crowded, at 10:30 p. m., and heard a man in charge of a side attraction bawling out, "Hams! 10c apiece! A whole ham for 10c. Come get a ham!" etc.

After sizing up his display on the back wall of his booth, I noted each piece was wrapped in an Armour Shield Brand ham wrapper. I advanced to the stand, pointed to what I thought was a shoulder—commonly called "Picnics"—and asked him to get that ham down. He took down a genuine ham, but I told him "not that, but the next one." I removed the Armour ham wrapper and disclosed a Swift & Co. "Picnic" shoulder. I then gave this man my card, asking him if he did not know that he was violating the law, to which he did not reply. Upon being ordered to remove the ham wrappers he told me that he did not have time. I then told him to pack them up and not expose them for raffle, and then started on a query for the justice of the peace to procure a warrant. Being unable to find the justice, I returned to the carnival grounds to learn whether or not he had taken the misbranded meats off display. He had.

After learning that this carnival would open in Toppenish the following week, I came on to Seattle. Being compelled to visit Yakima the following week on court and matters of destroying unfit-for-food canned vegetables, I had communicated with Yakima City Meat Inspector J. O. White, and had him meet me on Thursday, May 27th. That evening we drove to Toppenish, found the carnival tents all pitched for business, but discovered the Ham-man's booth was locked, whereupon we returned to Yakima.

On Friday I filed a complaint against D. E. Wade, the name that was on the invoice taken from the carnival Ham-man at Cle Elum, and got a warrant for his arrest, then called up Chief of Police Fleming at Toppenish, explaining who I was, and asking him to meet me at his police station that evening at 7 p. m. Inspector J. O. White of Yakima and I reached there on time and I gave the chief the warrant, as per instructions from the court and prosecutor at Yakima, for service, having him and the inspector circulate in the crowd, while I remained in the background with Ham-man in full view, with instructions when he saw me advance to the ham stand for him to follow. About 9:30 p. m. the carnival was going full blast and so was the Ham-man. Finally a man won on the wheel and the Ham-man bawled out, "Another gentleman wins a genuine ham," and I saw him reach and give the man a "Picnic" shoulder. I then walked out to the stand and asked him to get me down a ham. (He had only two genuine hams, the others all being shoulders.) He recognized me but complied with my request. When I took the wrapper off it disclosed a "Picnic" shoulder. Then I told the chief of police to read him the warrant and take him, and I would bring the outfit. Inspector White brought in his car and we took the meat to the police station. The following Sunday the Chief of Police told me the Ham-man had jumped his $100 bail, hams, and all else.

On Monday, May 31st, Inspector White and I again drove to Toppenish and took the meat to Yakima, preparatory to getting an order from the court to sell it. That night I came to Seattle. On June 1st the Ham-man appeared in Justice King's court in Yakima, giving his true name—L. H. DeWaid—and plead guilty, and was fined $50 and costs. He wanted to take the meat, but the prosecutor refused to give it up without an order from this department. Last week, while in Yakima, I learned the carnival had gone to Freewater, Oregon. Through Prosecutor Ward of Yakima I sent two waivers in duplicate, one to the mayor and one to the postmaster, each of Freewater, asking them to locate L. H. DeWaid, if possible, and we caught him at Baker City, Oregon, where he signed the waiver and returned it. The thirteen "Picnic" shoulders, weighing 59 pounds, were sold in Yakima last Monday at 25 cents per pound, $14.75, the check in payment being drawn in favor of the Washington State Treasurer, and forwarded through Yakima county prosecutor's office to the State Treasurer, with a receipt for the money on file in this office.

Thus endeth the chase of a Ham-man through Yakima valley.

A Uniform Egg Law

The report of the committee on a uniform good egg bill to the Convention of Food, Feed and Drug officials of the South Central States, as printed in the June number of the American Food Journal, is worthy the careful consideration of every person dealing in eggs.

Rigid candling requirements are highly commendable. No one desires to pay good egg prices for bad eggs. No reputable dealer will knowingly sell eggs of a quality likely to cast reflection on his reputation as a dealer in high-grade food products. Even transportation of eggs unfit for food constitutes an economic loss.

Candling certificates placed in the case furnish the buyer an easily ascertainable history of the eggs, and candling records furnish the inspectors or enforcing officers of the state with greater detail if required. A nominal license fee of $1.00 per year does not appreciably add to the cost of the product, yet it furnishes some revenue for enforcement of the Act, and the license feature permits the State authorities to penalize an offender by revocation of his license which is often more effective than a criminal prosecution.

We unhestitatingly endorse this bill as drawn without the suggested provision for grading or standards. Armour and Company have long been working along similar lines in gathering and marketing Veribest Eggs.

We believe, however, that any attempt to classify eggs by reference to age, or in great detail, would be so confusing as to virtually nullify the other provisions of the Act. No one can accurately tell the age of an egg by examination of it. In the Spring when the lay is heaviest, eggs are ordinarily promptly marketed by the farmers. The reverse is true when the lay is light. Buyers hold eggs longer in the winter time when it takes more time to accumulate a car load or sufficient quantity to secure the most advantageous freight rates. The wholesale dealers cannot without a great deal of expense and trouble trace the eggs back to the farmer and thus ascertain the age.

Under the cold storage laws eggs become a cold storage product when carried 30 days in a cold storage warehouse. The Committee's suggested standard for "fresh eggs" are those which have not been held for more than 14 days after having dropped from the hen. There is a hiatus of 16 days between this 14-day period and the time when they can be regarded as cold storage eggs, if carried under refrigeration, when they must bear some prefix other than "fresh" or "cold storage." What is this prefix to be? Under such standard they could not be sold simply as "eggs." It might be feasible to put some limitation on the use of the term "strictly fresh," but we seriously doubt the practicability of going beyond that.

ARMOUR AND COMPANY
CHICAGO

Lowering of Food Prices

IT is generally agreed that if food costs are to be lowered a more economical system of distribution of farm products must be perfected and placed in practical use.

Standardization, say experts of the Bureau of Markets, United States Department of Agriculture, is the essential basis for such a system. This means not only standard grades for fruits and vegetables, but standards for the containers in which they are packed.

Should Sell Produce by Weight

The Bureau of Markets is charged with the enforcement of the United States standard container act, which provides only for standard capacities for grape and berry baskets used in interstate commerce. The application of this law has resulted in the widespread use of these containers in intrastate commerce also, for shippers have come to appreciate the benefits derived from the use of uniform methods of marketing such fruits.

Standardization of larger shipping containers, such as hampers and round stave baskets is equally desirable, say the bureau's experts. Of course, the best method is to sell produce by the pound, but where it is impractical to sell by weight uniform containers should be used. Bushel baskets of peaches from Georgia and Colorado should contain the same quantity of peaches. The same is true of any other food commodity shipped in hampers or baskets.

An illustration of how the present methods result in dissatisfaction is the case of a Florida producer who recently shipped potatoes to the New York market in a container with which the trade was not familiar. Although the potatoes were of high quality, difficulty was experienced in disposing of them. When they were finally sold the price was considerably lower per pound than that commanded by potatoes packed in the customary manner.

At present there are about 50 types of hampers and over 20 sizes of round-stave baskets in use. Many of these sizes are simply the outgrowth of custom in various shipping localities; others are used for the express purpose of deception. And aside from the confusion and uncertainty that result from the use of dozens of different kinds of containers, millions of dollars are annually lost through destruction of produce in transit on account of the weak construction of the containers used.

Would Reduce Number of Containers

Many large growers, shippers, and basket manufacturers appreciate the desirability of reducing the number of these containers, and a nation-wide movement is on foot to eliminate many of them. Co-operative selling organizations are already doing much to promote uniformity and standardization. It means money to them not only because of the familiarity of the trade with the containers used but in permitting methods of loading into cars that reduce the likelihood of breakage to a minimum.

After a careful canvass of the situation the Bureau of Markets believes, and in this those who have studied the problem are of the

same opinion, that five standard hampers and four standard round-stave baskets are sufficient to meet all shipping requirements. The specifications provide for volume, dimensions or shape, and strength. In addition to the advantages of uniformity, the adoption of these sizes will enable the railroads to work out loading rules that will permit of a more intensive utilization of car space, and which will be bound to reduce to a minimum claims on account of damage in transit.

Proposed Dimensions for Standard Hampers

Capacity	Inside dimensions: Diameter of top	Diameter of bottom	Slant height	Length of stave	Thickness of stave
1 peck	10⅜	6½	9⅝	10⅛	1/10
½ bushel	13	8½	12	12⅝	1/10
1 bushel	15⅛	9	19	20	1/8
1½ bushels No. 1	16¼	9	26	27	1/6
1½ bushels No. 2	16¾	10	23	24	1/8

Proposed Dimensions for Standard Round Stave Baskets

Capacity	Inside diameter at top	Average inside depth	Number of stave.	Thickness of stave
½ bushel	13½	8½	20	1/20
1 bushel	17	10¾	20	1/18
1½ bushels	19	12¾	24	1/16
2 bushels	21	13¾	24	1/16

Putting Over the Apple

EAT more apples! Bake more apples and apple pies! Have apple sauce for breakfast every morning! is the appeal to consumers made by Dr. Eugene H. Porter of the New York State Division of Foods and Markets.

With a bumper crop in all the eastern states, New York this year will produce one-fifth of all the apples raised in the United States. In all there will be approximately 40,000 cars of New York State apples to market. This quantity is several times as many as the markets can take care of. Unless the usual consumption is increased many of these apples will be left to rot on the ground, for the price which the grower is now offered for them is only $1.50 a barrel and that sum does not pay the cost of the barrel and the picking and hauling to the station—not to mention the other costs of the grower in raising the apples.

In spite of this large production and low prices at the shipping points the retail price for apples has not lowered accordingly. This is not entirely because retailers are ignorant of the market, nor because they are intentional profiteers in apples, according to Commissioner Porter. The real trouble is that the retailers buy in such small quantities and their turnover is so slow that they charge a large margin of profit to protect themselves and pay the high overhead cost of their small volume of sales.

In addition to the ordinary retail stores where apples are now sold, Commissioner Porter states that arrangements are being made with many large chain stores and department stores that do not ordinarily handle fruit of any kind to this year buy apples direct from the growers and feature sales of apples at specially low prices. Arrangements are also being made with the market bureaus of nearby states to feature apple campaigns in these states to stimulate the consumption of this fruit.

Preventing Pink Color In Oysters

MEASURES to prevent contamination of oysters in and about oyster houses will stop the trouble periodically experienced by shippers when a pink color develops in the liquor or in the oysters themselves. This conclusion has been reached through several years of investigation by the Bureau of Chemistry, United States Department of Agriculture, and by an investigator at Brown University.

It is recommended that all bins, benches, tubs, and other equipment with which oysters come in contact be scrubbed thoroughly with water and then washed with a .04 per cent solution of formaldehyde gas, which is equivalent to one part of formaldehyde to 2,500 parts of water. The solution may be made by adding one part of commercial formalin to 1,000 parts of water. The washing should be done in the fall before any oysters are brought to the opening house, and should be repeated several times during the winter. Care should be taken that no formaldehyde remains on any of the utensils with which the oysters come in contact, since it might get in the oysters and render them injurious to health. Thorough washing in clean water will remove the formaldehyde.

The cause of the pink color is a yeast-like fungus which grows readily at low temperatures, the investigations have shown. Tests at an oyster house on Narragansett Bay showed that the boats and utensils about and within the house were heavily infested with the pink yeast. No yeasts were found in the mud at the bottom of the bay, and yeasts were present in only a small number of samples taken from the water. Some oysters taken from the water contained small numbers of the organism, but it is not believed that this is an important source of infection. There is no evidence that oysters containing the pink color are injurious to health.

The occasional presence of the yeasts in water samples and on oysters taken from the oyster beds is charged to the fact that culled oysters and shells, which had been contaminated in the oyster house, were later dumped back into the water, carrying large numbers of the pink yeasts with them.

Bleached Flour

BLEACHED flour coming within the jurisdiction of the Federal Food and Drugs Act is adulterated if the bleaching has reduced the quality and strength of the flour or concealed damage or inferiority, according to a recent statement by the Bureau of Chemistry, United States Department of Agriculture, in answer to a number of inquiries regarding the attitude of the department on the bleaching of flour. Bleached flour may be shipped within the jurisdiction of the law only under the condition that the bleaching has not concealed inferiority or impaired the quality or strength of the article, and then only on condition that it is branded plainly to indicate that it has undergone a process of bleaching. Failure to label the containers to show that such flour has been bleached will subject it to a charge of misbranding.

Supreme Court Makes Ruling

The United States Supreme Court has ruled with reference to the section of the law relating to the addition of a poisonous or deleterious ingredient that to constitute an offense an article of food sold must, by the addition of an ingredient, be rendered injurious to health, and, furthermore, that all the circumstances must be examined to determine whether the article of food has been rendered injurious. No action will be taken at the present time on the ground that bleaching introduces into the flour a substance which may be injurious to health,

(Concluded on page 33)

How Canned Food will help a Woman with Her Greatest Problem

Three meals a day
—a thousand a year.

DO you feel like "just giving up" sometimes when trying to tempt the appetites of that family of yours?

Haven't you stood in the middle of your kitchen or pantry many a time, wondering what you would "get" for the next meal?

But suppose that the next time you look around your pantry for inspiration, you discover a variety of canned foods on the shelves—*real* foods that give you surprising suggestions for tempting meals!

Canned Food Variety Solves your Meal Problems

The variety of canned foods is wonderful, and the number of things that can be made with such foods is still more wonderful. You need not worry about variety to your meals if you are using canned foods as freely as you *can* use them.

You need not worry that meals won't look tempting, taste delicious and satisfy fickle appetites.

Greatest Allies a Woman can Have

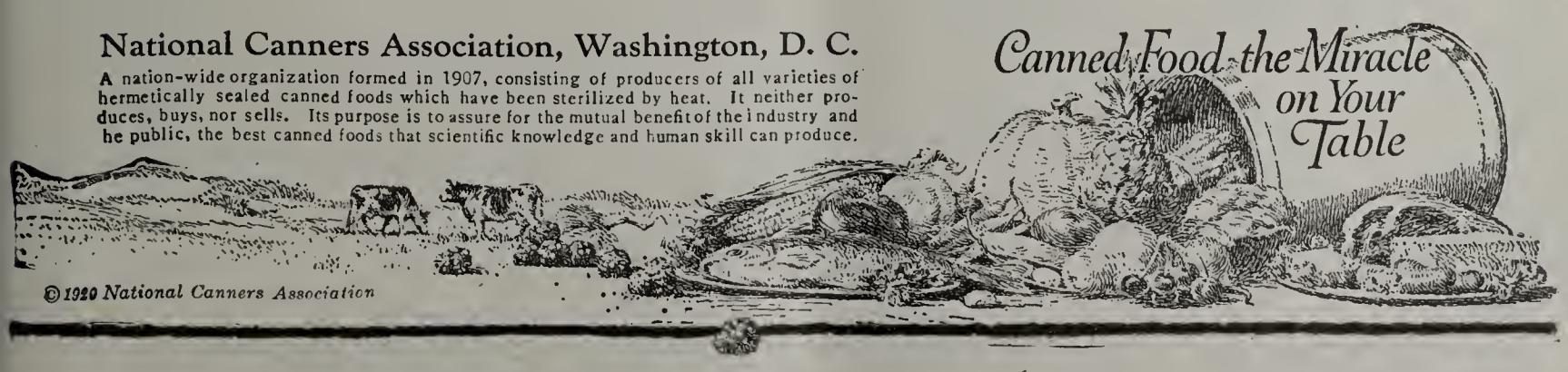
With plenty of canned foods on hand in full variety of fruit, vegetable, fish and meats, to say nothing of soups and milk, a woman is more resourceful than her family would have believed possible.

Many a Surprise in store for your Family

It is almost like travelling all over the country and eating the choice foods of each State of the Union when you use canned foods in all the variety of kinds and "dishes."

National Canners Association, Washington, D. C.

A nation-wide organization formed in 1907, consisting of producers of all varieties of hermetically sealed canned foods which have been sterilized by heat. It neither produces, buys, nor sells. Its purpose is to assure for the mutual benefit of the industry and the public, the best canned foods that scientific knowledge and human skill can produce.



© 1920 National Canners Association

SERVE the genuine—take advantage of the crowds that call for it—and the trade that makes the turnover.

THE COCA-COLA COMPANY ATLANTA, GA.

1A

Bleached Flour

(*Continued from page 30*)

say the officials, provided as a result of bleaching there is not introduced into the flour such a quantity of the bleaching agent as may render it injurious as indicated in the decision of the Supreme Court.

Further Action Possible

Should evidence later becomc available that the bleaching of flour introduces an ingredient in minute quantities which has the effect of rendering the article injurious to health, announcement of the fact will be made, and appropriate action taken to prevent thereafter the shipment of bleached flour within the jurisdiction of the food and drugs act.

Whether bleaching in any given shipment reduces the quality and strength of the flour or conceals damage or inferiority must be decided on the basis of the facts in each particular case.

Vegetable Oils

(*Continued from page 8*)

colored butter were mixed with Margarin.

The Oleomargarin law was passed long before the pure food law which guarantees to the public that our government is looking after the purity of the food sold and at the same time protects the public against fraud. There is no law to protect the public against inferior butter which, being the product of the worshipped cow, goes scot free. What I would like to see is the repeal of the Oleomargarin law, with the placing of both butter and margarin under the pure food law, which would be ample to protect both the health and the pocket books of the public. For revenue purposes I would like to see a tax of 5 cents per pound on both colored butter and margarin. This would be in the nature of a luxury tax, which would be paid by the user, and would be fair to everybody. The law would not hurt the makers of gilt edge butter, but would make the manipulators of damaged cream and inferior butter improve their product or go out of business. Proper regulations for packing and branding could be easily enforced, and justice done to all. I would like to suggest that every member of this Institute write a personal letter to his Congressmen and Senators and arouse their interest in straightening out our archaic legislation.

Total Population to be Given in October

Population of nearly one-third of the cities and other incorporated places of the United States has been announced by the census bureau. Of the 14,196 cities and incorporated places in 1910 the population of 4,075 has been made public by the bureau.

Population of approximately one-third of the 3,068 counties and subdivisions of the country also has been announced.

Four months have elapsed since tabulation of enumerators' schedules began, and the first population announcement made. Orders have been issued to speed up this work in order to complete the country's fourteenth census within a period of seven months, and to permit announcement of the country's total population in October.

Strike Statistics

Over 3,000 strikes and lockouts, involving no less than 4,000,000 workers, occurred throughout the United States during 1919, according to figures compiled by the Bureau of Labor Statistics of the Labor Department in Washington. Of the total number of strikes in 1919, 125 were unauthorized and involved some 1,053,250 strikers.

The bureau's report showed the termination of 1,961 strikes last year, of which 624 were won by the employers and 533 by the employes. Seven hundred and twenty-nine strikes were compromised, while in forty-two cases the employes returned to work pending arbitration. In the remaining thirty-three strikes the results are not reported.

$1,185,184,692 have been cut from the gross debt of the United States during the fiscal year ending June 30. The Government's income during that period has exceeded its expenses for the first time in three years. A surplus of $291,221,547 was shown.

* * *

The Bruised Livestock Committee of the Institute of American Meat Packers estimates that the monetary loss on account of bruises alone approximate fifteen million dollars and millions of pounds of meat yearly. The Committee is trying to help reduce these losses.

* * *

Of every 100 sticks of gum manufactured in the world, 99 come from American factories and 90 wind up their existence between American teeth.

SAUER'S

THE NATIONAL EXTRACT

VANILLA AND 32 OTHER FLAVORS

For more than a quarter century the name Sauer has meant all that is good in flavoring extracts. A name that has been handed down from generation to generation as a synonym of quality.

33 Flavors in 12 sizes to meet the needs of everyone.

Manufactured by
THE C. F. SAUER CO.
Richmond, Va.

Order From Your Jobber

SEVENTEEN HIGHEST AWARDS FOR
Purity, Strength and Flavor
LARGEST SELLING BRAND IN THE U.S.

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY
Chicago *In Business 66 years* U. S. A.

Growth of the Nut Margarin Industry in the United States

THE growth of the nut margarin industry in the United States is shown by the following figures received from the Bureau of Markets of the United States Department of Agriculture. The figures represent pounds. The years are calendar years. There is no available data by months prior to 1917. There is no available data prior to 1916. The industry began about this time. Milk is used in the production of each of the following types or kinds or margarin.

NUT MARGARIN (EXCLUSIVELY VEGETABLE)

	1917		1918		1919		1920	
	Colored	Uncolored	Colored	Uncolored	Colored	Uncolored	Colored	Uncolored
January	0	627,955	0	7,923,748	230,437	12,558,830	338,778	18,091,687
February	0	608,330	0	12,122,875	1,000,592	6,524,040	298,348	16,719,653
March	0	1,023,895	0	9,328,910	1,567,345	8,885,990	404,059	19,647,387
April	0	519,839	57,935	6,910,665	1,947,611	11,072,509	338,087	17,157,202
May	290	721,730	1,000	5,381,407	1,096,739	10,526,880	346,528	19,424,086
June	435	808,599	31,305	3,397,066	324,621	6,821,829	293,617	12,200,494
July	0	994,536	14,494	3,125,656	875,726	7,251,828	.....	.....
August	0	684,875	0	2,705,854	1,156,042	8,378,158	.....	.....
September	0	1,079,376	0	5,927,520	87,152	9,831,568	.....	.....
October	0	3,113,512	0	12,957,218	377,360	14,619,363	.....	.....
November	0	5,144,790	600	8,327,875	732,688	16,868,829	.....	.....
December	0	6,476,045	7,160	10,752,678	396,381	19,566,330	.....	.....
Total	725	21,803,482	112,494	88,861,472	9,792,694	132,906,154	.....	.....

EXCLUSIVELY ANIMAL MARGARIN

	1917		1918		1919		1920	
	Colored	Uncolored	Colored	Uncolored	Colored	Uncolored	Colored	Uncolored
January	72,570	2,421,723	0	71,094	0	122,870	0	253,736
February	61,934	1,700,419	8,240	1,242,413	0	1,148,415	69,487	378,281
March	0	1,271,701	0	45,546	0	115,469	3,346	450,187
April	0	470,561	0	45,668	0	227,453	4,558	456,811
May	520	168,706	15,070	199,282	28,470	247,565	6,182	359,726
June	965	127,586	12,925	130,490	30,926	197,594	5,988	204,602
July	0	881,666	14,363	178,810	25,144	182,848	.....	.....
August	900	73,350	13,291	204,999	32,371	195,977	.....	.....
September	0	115,908	16,501	449,955	46,770	484,567	.....	.....
October	0	125,373	0	341,717	0	192,431	.....	.....
November	0	108,684	0	152,739	0	129,278	.....	.....
December	0	97,064	922,474	243,958	1,001,682	146,739	.....	.....
Total	136,889	7,562,741	1,002,864	3,306,671	1,165,363	3,391,206	.....	.....

ANIMAL AND VEGETABLE MARGARIN

	1917		1918		1919		1920	
	Colored	Uncolored	Colored	Uncolored	Colored	Uncolored	Colored	Uncolored
January	660,734	17,159,550	495,199	24,822,742	813,021	27,520,207	814,888	17,558,636
February	630,477	18,554,882	564,181	22,858,824	565,492	12,460,777	675,133	15,284,412
March	648,656	20,228,509	1,126,881	21,674,178	1,277,346	18,619,984	1,114,961	15,880,147
April	703,882	22,062,888	504,643	16,202,968	710,708	20,673,606	971,207	14,515,453
May	708,238	23,380,039	608,314	18,505,613	819,449	19,222,687	816,038	16,207,890
June	558,852	17,055,656	474,430	15,449,461	628,304	11,526,541	782,428	11,649,911
July	494,302	14,852,885	417,574	17,016,884	599,696	15,659,448	.....	.....
August	473,461	18,881,894	428,001	15,791,016	711,734	16,707,735	.....	.....
September	516,178	25,049,610	504,522	21,427,634	575,351	16,154,422	.....	.....
October	616,313	30,132,079	628,602	30,247,727	730,401	19,902,244	.....	.....
November	500,959	23,406,782	541,355	23,172,077	817,868	17,540,726	.....	.....
December	466,159	23,676,110	762,740	28,027,448	1,053,311	18,770,912	.....	.....
Total	6,958,211	254,440,884	7,056,442	255,196,572	9,302,681	214,759,089	.....	.....

January 1 to December 31, 1916

Nut Margarin (exclusively vegetable)..... 1,941,932
Exclusively Animal Margarin..... 16,038,718
Animal and Vegetable Margarin.....184,463,411

Metamorphoses of Food

(*Continued from page 22*)

adapted to eat the same class of food. What is one man's meat is another man's poison, and the Englishman would become flabby of muscle and lacking in energy if fed on the handful of manioc which keeps the laborer of Benguela in perfect form.

In conclusion, let us not forget that one of the greatest aids to digestion is the stimulus of festal excitement, the laugh and converse of a joyous dinner, and other pleasurable conditions, whilst solitude, sorrow and silence too oft have the reverse effect. Eating seems a simple process until a long experience has taught us its complexity. Food seems a simple thing until science reveals its metamorphoses.

United States Imports Raisins in Unprecedented Quantities

NEARLY eight million pounds of raisins were exported from Malaga, Spain, to the United States during the first six months of 1920, a quantity that exceeds the total raisin exports from that port for the seven-year period 1913 to 1919, inclusive, according to the Bureau of Markets, United States Department of Agriculture. Practically the entire 1919 Malaga raisin stocks have been exhausted and there are no stocks on hand. The new crop will appear on the market between August 20 and 25. The American consul reports that there is prospect of increased production. The raisin growers are looking for a continuation of the great demand for raisins in the United States.

Uncle Sam's Pied Pipers

SPASMODIC rat extermination campaigns are of course beneficial, but to secure lasting results constant warfare must be waged against the rat, say specialists of the Bureau of Biological Survey, United States Department of Agriculture. The necessity for this is plain in the fact that rats begin to breed at three months and have from 6 to 10 litters a year, with an average of 10 young to each litter.

Specialists of the Department of Agriculture for years have made extensive studies of rats and methods of exterminating them. No matter how badly a house may be infested with rats, these experts maintain.

A Breakfast Dainty

That makes ice cream doubly delicious

Puffed Rice or Corn Puffs—just as you serve them at breakfast—add exquisite nut-like flavor to ice cream.

The airy morsels, flimsy as a snowflake, melt into the cream. And they add a taste which nothing else supplies.

Also with berries they add a delightful blend. They add what crust adds to a shortcake—a flaky, flavory garnish.

Yet major foods

Puffed Grains seem like food confections—like fascinating tidbits, created to entice. They are airy, toasted bubbles which crumble at a touch.

But consider what they are. Two are whole grains with every food cell blasted—fitted for digestion as grains never were before.

Every granule has been steam exploded. Every atom of the whole grain feeds. They supply supreme nutrition.

Yet they are so dainty that you use them on ice cream. You use them in candy making. Children eat them like nut-meats—dry. The very foods which form the ideal breakfast.

Millions of dishes, in these hot months, are being served every day. You are missing much if you don't serve all three Puffed Grains, all day long, in plenty.

Puffed Wheat

Puffed Rice

Corn Puffs

All Bubble Grains

The supreme summer supper

For luncheons and suppers serve Puffed Wheat in milk. These are grains of whole wheat puffed to eight times normal size. They are flavory and toasted—so airy that they float. And they do not tax the stomach, for the food cells are exploded.

The Quaker Oats Company

Sole Makers

the use of the methods perfeeted by them will absolutely, and without doubt, rid the house of the rodents.

Throughout the United States health authorities are advocating the use of these methods and gratifying results are being secured. Thus Kansas has designated a special "rat day." Cincinnati is spending thousands of dollars in a rat campaign, and similar movements are being conducted at Norfolk, along the Gulf Coast, and in many other eities. In addition the bureau is constantly giving advice to hundreds of correspondents.

"Rat-proofing" of buildings is the basic step in rat extermination. Food should be protected and sanitary methods employed for disposal of waste food. Where rats may die in the walls poisoning is not recommended, but where this condition cannot result barium carbonate worked into almost any kind of food is the poison to use. Snap traps, often called "guillotine traps," are the most effective in trapping. The traps should be placed in every part of the house that rats frequent. One or two traps are not enough. The traps should be baited with fresh meats, seeds, nuts, vegetables, fruit, or any other food.

The bureau will be glad to advise any one regarding the correction of any rat condition, upon receipt of full details. Letters should be addressed to the Bureau of Biological Survey, United States Department of Agriculture, Washington, D. C.

Canners to Meet in Atlantic City

ATLANTIC CITY has been ehosen as the meeting place for the Fourteenth Annual Convention of the National Canners' Association. The date will be January 17-21, 1921.

This was decided upon after a series of conferences of the location committee composed of Walter J. Sears, president of the National Canners Association, Ogden S. Sells, president of the Canning Machinery and Supplies Association, and H. A. N. Daily, president of the Canned Foods and Dried Fruit Brokers' Association.

Inasmuch as the industry is going through one of the most critical periods in its history, the next annual meeting is expected to surpass all others in importance. By then the eonsumer will have had his first introduction to the seal, for by that time canned foods bearing the seal will have made their appearanee on groeers' shelves.

Young's Million Dollar Pier has been secured for the machinery exhibit. Arrangements have been made for adequate heating facilities. One of the possible features in connection with the machinery exhibit is a model cannery to be shown under actual working conditions.

This time there will be no convention hotel, but meetings will be held in all Boardwalk hotels. The opening session will probably take place on the Steel Pier.

New $1,000,000 Factory

As a site for a million dollar factory building the Roman-Callman Company sold a plot of 60,000000 square feet, with railroad siding, in Long Island City, to the Sawyer Biseuit Company of Chicago.

The new structure will be a seven-story fireproof building from plans of Ballinger & Perrot, architects, eontaining over 200,000 square feet of spaee.

* * *

The three largest passenger ships, as well as all the vessels of our new Navy, are to use oil for fuel.

Sugar Production Increased

(*Continued from page 10*)

which contains more moisture or many more micro-organisms for that reason will deteriorate mueh more rapidly than sugar whieh is dry or eontains few harmful miero-organisms. It is therefore poor policy from the standpoint of conservation to store such sugar long. The question which arises is: how to determine which sugar is safe and which unsafe to put in storage?

Method of Determining Sugar Quality

Having identified the injurious micro-organisms, Dr. and Mrs. Kopeloff developed a method by whieh the quality of a given sugar might be determined in this respect. By simply consulting a chart after a preliminary analysis, one may now find out whether or not a given sugar will deteriorate or lose its sweetness in storage. The sugars which are unsafe to keep may be melted up first, the sounder sugars being held in storage with safety.

Dr. and Mrs. Kopeloff, by making bacteriological examinations at every stage of the sugar-making process, have found that sugar deterioration ean be prevented by substituting dry or superheated steam for water in the final proeess of washing sugar in the drums in whieh the sugar is dried. These centrifugals, as they are called, in their whirling suek up air from the floor which may be contaminated with germs. Also, it is common practice to make the color of the sugar lighter by washing the crystals with water, which may be contaminated with molds and bacteria.

In the new process it is shown that dry steam is suecessful in killing over 99% of these avid molds and bacteria.

While the practice of steaming sugars is not a new one, the results are shown to have a direct practical value in eliminating losses which have been a eonsiderable factor in the American bill for sweets.

Recent Patents

The following patents of interest to readers of this journal recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trademark attorney, Continental Trust Building, Washington, D. C., at the rate of 20c each. State number of patent and name of inventor when ordering.

1,338,231. Solid soluble beverage—extract and process of manufacturing same. Jonathan K. Lippen, Battle Creek, Mich., assignor to Postum Cereal Co., same place.

1,338,354. Confection-making apparatus. Theodore Bosshard, Brooklyn, N. Y.

1,338,684. Process of treating fruit-juices. Frederick L. Dunlap, Chicago, Ill., and Rudolph A. Kuever, Iowa City, Iowa.

1,338,803. Process for making non-intoxicating beverages. Walter Wilhelmy, Sr., Pueblo, Colo.

1,339,032. Apparatus for drying food. Dwight Lenzi, Idaho Falls, Idaho.

1,339,087. Bread-molding machine. Jan Artkop, Detroit, Mich.

1,339,092. Method of and apparatus for drying fruits, vegetables, and other substances. George H. Benjamin, New York, N. Y.

1,339,115. Method for desiccation. Adolph W. Lissauer, Walter L. Fleisher, and Robert E. Keyes, New York, N. Y., assignors to American Drying Processes, Inc., same place.

1,339,616. Multiple baker's oven. Otto Wundrack, Maywood, Ill., assignor to Petersen Oven Co., Chicago, Ill.

1,339,637. Dough-compressor. Richard R. Tybout, Philadelphia, Pa., assignor to Guano & Raggio, Inc., same place.

1,340,079. Tomato and fruit sorter and distributer. Thomas J. Peters, Peters, Fla.

1,336,878. Mixing and kneading machine. Friedrich Aeschbach, Aarau, Switzerland.

1,336,886. Method and apparatus for retinning ice-cream cans. Wallace V. Callender, Chicago, Ill.

(*Concluded on page 38*)

E. PRITCHARD

Packer and Manufacturer of the Finest

"EDDYS"

BRAND

Canned Foods, Jellies, Preserves,
Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

CANNED SALMON

ALL GRADES
ALL SIZES

Largest Distributors in the World

KELLEY-CLARKE CO.
New York City Seattle, Wash.

TIN and FIBRE CONTAINERS

for

Foods—Drugs—Oils

Infinite Variety
Large Capacities
Prompt Deliveries

American Can Company
Chicago New York San Francisco
With Offices In All Large Cities

Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

Dixie Margarine is pasteurized into purity in every ingredient.

Churned by Wm. J. Moxley Inc. CHICAGO

Every Kind of WARD'S

FAR FAMED

BREAD and CAKES

is the finished and perfected result of skill, science, experience, and the use of highest grade materials.

WARD BAKING COMPANY

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Brooklyn Pittsburgh Chicago Baltimore

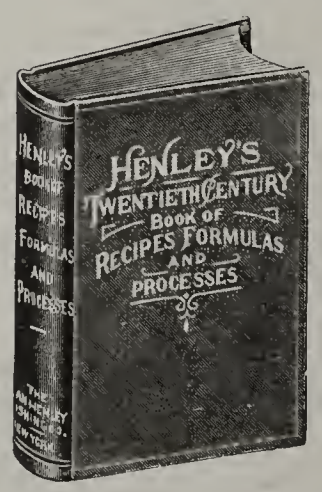
The Greatest Book

Ever Offered to the Public

1920 EDITION—JUST READY

Henley's Twentieth Century Book of

RECIPES, FORMULAS AND PROCESSES



10,000 Trade Secrets
Practical Recipes
Chemical Processes
Scientific Formulas

HOW TO MAKE EVERYTHING
FOR THE HOME, THE FACTORY AND THE WORKSHOP

Antiseptics, Waterproofing, Lubricants, Rust Preventatives, Dyes, Filters, Cleaning Preparations, Enameling, Beverages, Inks, Adhesives, Polishes, Disinfectants, Flavorings, Cosmetics, Ceramics, etc., etc.; how to make fly paper, to color flowers artificially; to estimate weight of ice by measurement; to make materials fireproof; to work with metals—aluminum, brass, etc.; to make anything and everything, from A to Z.

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THE AMERICAN FOOD JOURNAL

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OCTOBER, 1920

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Or...9 lbs. veal cutlets
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Or.....24 lbs. bananas

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Cost per 1,000 Calories

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Compare the cost per 1,000 calories. See table at side, based on prices at this writing.

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THE AMERICAN FOOD JOURNAL

The National Magazine of the Food Trade

Vol. XV OCTOBER, 1920 No. 10

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THE AMERICAN FOOD JOURNAL

The National Magazine of the Food Trade

Vo'. XV CHICAGO, OCTOBER, 1920 No. 10

Uniform Food Laws Advocated

Federal and State Officials in Convention at St. Louis Endorse This Reform

Uniform food legislation, which many in the trade have been advocating for years, was endorsed at the annual convention of the Association of American Dairy, Food and Drugs Officials held at St. Louis, Mo., October 5, 6 and 7.

Guy G. Frary, president of the association, in his opening address, strongly advocated uniformity, and suggested as a means to that end the appointment of a committee to confer with special committees representing food manufacturers and distributers. Dr. Carl L. Alsberg, chief of the Bureau of Chemistry, U. S. Department of Agriculture, who was at a later session elected president, also endorsed the movement for uniform food laws.

Among the resolutions adopted was one endorsing the bill in Congress relating to slack-filled containers, the food officials generally commending the plan of requiring all such packages to be plainly marked as to the volume or weight of their contents. The association deplored the loss of so many of the members of the staffs of the United States Department of Agriculture and the state food offices because of obtaining positions with commercial houses at better salaries, and as a remedy the association recommended to Congress the better remuneration of such experts in order to retain them.

It was originally intended that this convention should be held during the last week of September, but due to inability to secure hotel accommodations it was postponed. This caused a few changes in the program, which did not materially affect the excellence of the convention.

A feature of this convention was the reduction of topics to a basis where it would be possible for everyone in attendance to discuss in detail the matters that came up. This proved very beneficial, as the members of the association freely took advantage of the opportunity afforded them for full discussion.

The convention was well attended, the attendance including city, state and federal officials from thirty-five states.

The convention came to order on Oct. 5 at 9:30 a. m., and the invocation was given by Dr. George B. Kuhlman, after which the initial address of welcome was made by former Senator Xenothon P. Wilfley of Missouri, representing Governor Frederick D. Gardner of Missouri. He was followed by the mayor of St. Louis, Henry W. Kiel, with a second address of welcome, extending the hospitality of St. Louis to all the members. The recognition shown the association by the state and city heads in this manner was well received and caused a very spirited response to the address of welcome by Wilbur F. Cannon, Food and Drug Commissioner of Colorado, whose speech was a classic.

The business of the meeting began by the appointment of the credentials committee, followed by the report of Secretary Fred L. Woodworth, Food and Drug Commissioner of Michigan. In the customary manner the secretary's report was followed by the report of the treasurer, George J. Weigle, Dairy and Food Commissioner of Wisconsin, his report showing the association being in a healthy financial condition.

Uniform Food Laws Recommended

The morning's work was concluded with the address of the President, Guy G. Frary, Vermilion, S. D., Food and Drug Commissioner of that state. He gave an excellent address, dealing as it did with the necessity of more uniform state legislation pertaining to the food and drug laws and in conjunction with the National laws. This is a big problem and one that will be very difficult to handle, but it is his belief that the association has now progressed to a point that it should not fear the handling of a difficult task.

In his talk he stated that, "regardless of what may be the real cause of the existing disparity between different State laws and regulations and between State and National, the fact remains that such disparity exists, and, in the opinion

of representatives of some food manufacturers, it results in very great and serious inconvenience and expense to manufacturers."

In order to bring about greater uniformity of the laws, President Frary suggested that a committee from the association be appointed to work directly with the food manufacturers and distributers and that the joint committees in each State recommend such necessary modifications in State laws as may seem advisable.

The afternoon session opened with a paper entitled "The New Pharmacopoeia and its Relation to Public Health," prepared and read by Prof. L. E. Sayre, dean of School of Pharmacy, University of Kansas, and member of the Pharmacopoeia revision committee. He stated that a considerable portion of the work of revision of the new edition of the Pharmacopoeia will be devoted to the improvement of methods of standardization of crude drugs. There was considerable discussion of Prof. Sayre's statement about various groups of physicians' ideas about elimination of certain drugs from the Pharmacopoeia, which drugs at the present time are not being used by the medical profession. They have either outlived their usefulness or due to the advance of science have been superseded by other drugs that perform the same work in a more effective manner.

The convention was then addressed by Theodore F. Hagenow, former president of the National Association of Retail Druggists, the topic being "The Retailer and the Pure Drug Law." His talk was mainly about the association and the retail druggists always being willing to co-operate with the State officials.

Dr. W. G. Campbell, assistant chief, Bureau of Chemistry at Washington, was to follow Mr. Hagenow with a talk on "False Advertising and False Labels," but, due to the change in the time of the convention, was unable to attend. In his place the bureau sent Dr. A. Viehoover, who gave a very interesting talk on worthless plant substitutions which are frequently used for drugs and sometimes in place of foods. In conjunction with his talk, he had an excellent exhibition of some of these plant substitutes, together with the real plants for which they were being substituted.

Food Inspection in Cleveland

Wednesday's session was opened with a talk on "Sanitary Control in Food Inspection," delivered by Dr. Harrold Knapp, chemist in charge of the Department of Health, Cleveland. He spoke about the methods in vogue in Cleveland, feeling that an exchange of ideas and methods now in use by the various members would help all concerned. Dr. Knapp spoke about his experiences and the experiences of his department in connection with investigations of retail stores, particularly bakeries and restaurants. He spoke about the necessity of all people handling food products undergoing a physical examination and being up to a certain standard so as to prevent the carrying of diseases from such handlers of food products to the general public. He spoke about the necessity of clean cooking utensils and the elimination of flies, particularly in bake shops and restaurants. He told how they changed their inspectors in their various districts at certain intervals so as to prevent them from becoming known in the districts and which also prevented familiarity and possible graft. They also gave attention to the seasons of the year when certain places should be inspected more frequently. They gave prompt attention to and encouraged complaints from the public, as this gave them plenty of places to work on. When they found places that did not come up to the standard or where wilful violation was going on, in the case of first offenders, they gave them a short, limited time in which to put their places in a proper sanitary condition, and if this was not done in the allotted time, closure of the place quickly followed, and the place remained closed until put in proper condition.

One of the most effective means that they found to cause violators of the regulations to come to time, was to notify the newspapers of the conditions of these places and it almost invariably followed that the notoriety that the guilty ones got through the press, was such that they immediately put their places in proper shape or they would lose trade and be forced out of business. They found that the press was a powerful factor in getting prompt and efficient results.

Another plan that they followed out in the case of restaurants was the issuing of colored cards, which indicated the condition of the place. In the case of restaurants which showed an all around percentage of 90 per cent or over they issued a white card, which could be placed in a conspicuous place so that the customers would know the condition of the place after the proper inspection. A blue card indicated a percentage of 80 to 90 per cent, while a red card indicated less than 80 per cent.

Needless to say these proprietors of the restaurants would do everything possible to have their place on the right basis as the absence from their establishment of a high percentage card would result in the absence of customers which would ultimately force them out of business. The public was taught to look for the white card. Another thing of importance in his talk was the necessity for all officials to cooperate to the fullest extent with the Federal authorities so as to accomplish the best possible results.

Then followed the reading of a paper entitled "The Enforcement of the Sherley Amendment" by Dr. M. W. Glover, chief Office of Drug Administration of the Bureau of Chemistry. The substance of his talk was the necessity for close cooperation between the City, State and Federal authorities in order to bring about the strict enforcement of the "Sherley Amendment."

Following this, Prof. Lee of the University of California gave a short talk in connection with the past trouble various states have had with spoiled olives. He mentioned the fact that in the State of California, there are 38,000 acres of land on which olives are grown and that over 7,000 tons of olives are packed in that state annually. Therefore, it was of vital importance that the state go to the front and do everything possible to protect this industry by eliminating the cause of the spoilage. This was finally accomplished by causing all packers in processing olives to do this at a temperature of 240 deg. fahr., keeping them at the point for 40 minutes, which investigations showed, made them safe.

Retailer Talks on Food Laws.

John A. Ulmer, president National Association of Retail Grocers concluded the afternoon scssion with an address on "The Retailer and the Pure Food Law." He attacked the tax on sale of food substitutes, mentioning particularly oleomargarine.

He stated that the use of substitutes is frequently made necessary on account of the prohibitory prices of certain foods and if the substitute is healthful and is properly labeled, its use should be encouraged rather than discouraged by additional taxes. If the use of artificial coloring is harmful in oleomargarine, then its use ought to be prohibited entirely and it should not be permitted in butter. On the other hand, if the use of artificial coloring or flavoring improves the appearance or taste of any article of food without any injurious effects, then the use of same ought to be permitted with proper restrictions with regard to the label and informing the public as to the use of such coloring or flavoring. He said: "If articles of food are being sold or permitted to be sold by the paying of a special tax because of that particular article of food being unwholesome and injurious to the general health of the people, then you ought to condemn the sale of it. If, on the other hand, the food is wholesome and not injurious, then as a means of bringing down the high cost of living, you ought to go on record as favoring the repeal of such taxes, so the man who labors may be permitted to procure a substitute for the genuine article if such food is out of the reach out his pocketbook."

The afternoon session was opened with the reading of a paper on "Food Poisons" by Devine of the Iowa State College, Ames, Iowa. He took the place of Dr. R. E. Buchanan of the same university, who was to read a similar paper but was unable to attend on account of illness in his family.

Dr. Alsberg Favors Uniform Food Laws.

This session was concluded by Dr. Carl L. Alsberg, chief of the Bureau of Chemistry at Washington, who spoke on "The Relation of Uniformity in state laws to the Enforcement of the National Food and Drugs Act. "He reiterated to a great extent what was said by President Guy G. Frary in his address at the opening of the convention, an account of which has preceded this. Dr. Alsberg dwelt on the importance of carrying out the plan of getting together on uniform legislation. He stated that unifrom enforcement laws were necessary in justice to manufacturers and distributors of goods, who after preparing and labeling their products never know whether or not they will conform to the laws and regulations of the various states. He also spoke for a short while about the "slack filled container" bill as it is so called, which is now before congress. It is the contention of the association, that the package or container should in all cases be a true indication of the contents.

The morning session of the last day, Thursday, was given over entirely to the executive session open only to persons directly connected with federal, state or municipal agencies entitled to membership in the association. This was done so as to permit frank discussion of administrative matters with freedom to ask questions concerning problems difficult of solution.

Opening the afternoon session, Dr. R. E. Rose, State Chemist of Florida, read a paper on "Chemical Method for Determining Immature Citrus Fruit." This was very interesting. He stated that when you stop to consider that the crops of citrus fruits amount in the State of Florida to 15,000,000 boxes, and in California about 8,000,000 boxes, it can be readily appreciated what a problem it is in the marketing and distributing of these crops. The natural desire to get the fruit into the market in advance of a possible freeze by which the fruit at least would be made unfit for market, with the possibility of serious damage to the groves, and shortening the crop for several years to come; the temptation to ship the fruit as early as the market would accept them irrespective of quality was great, hence the shipment of immature fruit became general, particularly by shippers who had purchased crops on trees with a clause providing for removal at a fixed date. His paper quoted the "Immature Citrus Fruit" law of Florida.

U. S. Department of Agriculture

After Dr. Rose's talk, the president read the invitations that had been received for next years' convention. These invitations came from Atlantic City, N. J., St. Joseph, Mo., San Francisco, Cleveland, Buffalo and Atlanta. After the reading of these, Dr. R. E. Rose of Florida made an eloquent speech in behalf of Miami, Fla. He called attention to the fact that for a number of years he has had the honor of asking that Miami receive the convention, but was always refused on account of its location. He made a very convincing talk as to why Miami should get the next convention, and upon the vote of the members of the association, it was decided that the 1921 convention be held in that city. The decision by the members as a whole was a departure from previous years when it was always the custom of the executive committee to decide this matter. The executive committee will decide at some future date on the dates for the next convention. It was suggested by Dr. Rose that the best time would be between Sept. 15, and Nov. 1, as that season is particularly pleasant, and at this time most of the members of the association would be able to attend.

Following this, came the election of officers for the ensuing year. All officers were elected unanimously as follows: President, Dr. Carl L. Alsberg, chief of the Bureau of Chemistry.

First vice president, Dr. R. E. Rose, State Chemist of Florida; second vice president, Thomas Holt of Connecticut; third vice president, Miss Sarah H. Vance of Kentucky; secretary for a term of three years, Cassius Clay of Louisiana; treasurer, George J. Weigle of Wisconsin, re-elected. The executive committee will consist of A. M. G. Soule, of Maine, who was elected last year for three years; W. L. Frisbe of Nebraska, who at this convention was elected for a period of three years, and Dr. William Frear of the State College of Pennsylvania, who was elected for one year. The committee on definitions and standards will consist of Prof. L. E. Sayre, dean of the school of Pharmacy of the University of Kansas, and Dr. R. E. Rose, State Chemist of Florida.

Between convention sessions arrangements were made for inspection trips to food and drug plants in the city. Most important of these trips was the one through the "Bevo" and "Budweiser" plant of the Anheuser Busch brewery, where the members of the association and their friends were shown the processes of turning out these drinks from the beginning to the end. The trip was concluded with the serving of a luncheon by the Busch people. Thursday night, at the conclusion of the convention, an automobile ride, dinner and stag party was held for the men at the Riverview Club, ten miles from St. Louis. This same evening, a dinner and theatre party was given to the ladies.

President Frary Appeals to Officals for Uniform Food Laws

In his address to the convention of the American Association of Dairy, Food and Drug Officials, President Guy G. Frary made the following appeal for uniform food laws:

Regardless of what may be the real cause of the existing disparity between different State laws and regulations and between State and National, the fact remains that such disparity exists, and in the opinion of representatives of some food manufacturers it results in very great and serious inconvenience and expense to such manufacturers. As evidence of this opinion we have but to mention the introduction last year of the bill by Senator Calder of New York, known as Senate File 3011, or more often referred to simply as the Calder bill, and the testimony presented before the Senate Committee at its hearings on the bill. It is not my purpose, nor do I think it necessary, to dwell upon the provisions of this bill at this time. However, I mention it as evidence of the attitude taken by certain representatives of certain food manufacturers and distributers. That there are points on which the various laws differ is not denied, I feel safe in saying, by any of us.

The question is, are such differences necessary for the protection of the public health and to prevent adulteration, deception and fraud, or could these objects be accomplished through exactly uniform laws and regulations in the several States? It goes without saying that such laws and regulations in order to bring about this result must be uniform with the national law and regulations, whatever these may be.

What, then, are we to do in the matter? Upon looking over reports of former conventions I find that years ago there was appointed by this body a committee to work with a committee representing food manufacturers and distributers. These committees were to work out this problem of uniformity. No doubt, much good resulted from their work, but we are still confronted by the need for work of the same kind. I suggest, therefore, that in order to get at this matter directly, this body at this convention arrange for a committee of its members to work wit ha committee of similar size representing food manufacturers and distributers, and that the joint committee be instructed to make definite recommendations for such modifications in each of the State laws and in the National law as will bring about the desired condition, both as to uniformity and effectiveness of our pure food laws and the regulations thereunder. It is realized that this is no small task. Perhaps it is unreasonable to hope that there may be such uniformity. Think of the lightening of the burdens of some food commissioners which such uniformity would bring about, and (dare I mention it?) what would our good friends, the attorneys who have specialized in food law, find to engage their time? Nevertheless, I believe that it is a problem that can be solved. Why delay longer the accomplishment of what we have been for years saying is desirable? If uniformity will result in an economic gain without impairing the efficacy of the law in its protection of the public, then we owe it to our people to bring it about at the earliest date possible.

But, you may say, such committees may be appointed and after much painstaking labor in preparing uniform bills and regulations these will not be adopted by the several States. That is just the thing that we here should take in hand and come to an agreement upon. I do not presume to declare that the food executive officer may usurp the legislative function of his State government. Nevertheless, I think you will agree that this officer is looked to, in a great many States at least, for suggestions when it comes to consideration of legislation on food and drugs. His very position makes this the logical procedure, and in many States the officer is required by law to make recommendations concerning legislation. It should not be overlooked that if such committees as I have suggested be appointed and such uniform bills be proposed we shall have back of the movement the support of the food industries of the country.

We may well profit by the example of the Association of American Feed Control Officials in this matter of uniformity and co-operation with the industry. Between that organization and the American Feed Manufacturers' Association there has long been a harmonious working arrangement and united effort to secure the enactment of a uniform feed law in the several States. I believe such co-operation equally possible and advisable between our body and the manufacturers and distributers of food and drugs. If its working out means sacrificing some of our own favorite ideas for the good of the larger number we should not permit our selfish interests to stand in the way. We should face the proposition squarely and look this question of uniform laws and regulations in the face fearlessly, determined that if it is a condition which really calls for action and a remedy we will do our part in finding the remedy.

Macaroni Manufacturers Working For Standardization of Product

Newly Established Laboratory in Washington Has Many Problems to Solve

By M. J. DONNA

Secretary, National Macaroni Manufacturers' Association

THE macaroni industry, which covers the manufacture of alimentary pastes, was established in this country on a very small scale less than 50 years ago. It was at first entirely in the control of Europeans who brought to these shores a taste for this food and a knowledge of the mode of its manufacture.

Except among their own people, there was little demand for these products and the pioneers were content to plod along in their crude way of manufacture, depending upon imported goods to supply the wants of the more particular users. With the passing of these pioneers, and the assuming of manufacturing by their descendants who were somewhat better educated in American ideals and customs, the industry expanded and showed signs of progress until toward the close of the nineteenth century it had become of sufficient interest and importance to attract the shrewd American business man, who recognized in it a great business opportunity.

The entry of the American business man added the revivifying energy, the financial backing and the necessary "pep" to insure the success of an industry producing a food now considered so necessary by the masses. New plants were erected and old ones remodeled and modernized to insure the production of a food as cleanly and as appetizing as any prepared for the American table.

Not content with old methods of manufacture and willing to learn from their predecessors, American manufacturers sent representatives to foreign countries, particularly to Italy and Germany, to study the most advanced mode of manufacture and the ingredients used in the production of alimentary pastes that made the imported goods so popular.

Still Confronted by Many Problems

In spite of all the knowledge gained from the many experts who came to these shores and through the many representatives sent to study the plants in Europe, the up-to-date American macaroni manufacturer is still confronted by many problems peculiar to the industry that he must solve before a food is produced that will give entire satisfaction.

These are problems for the industry, rather than the individual, to solve. In order to centralize the research work, the more advanced thought in the macaroni industry has realized for some years the need of a national laboratory to study the many perplexing problems and to give the results of its investigations to the industry in general.

This thought became a realization when, at the 1920 convention of the National Macaroni Manufacturers' Association, held at Niagara Falls, N. Y., it was voted to establish a National Macaroni Laboratory at Washington, D. C., to be financed by the association and such individual manufacturers as desired special research work.

In selecting a director to have charge of the laboratory, the choice naturally fell upon Dr. B. R. Jacobs, whose years of training in the United States Bureau of Chemistry in direct charge of matters pertaining to macaroni standards, whose extensive acquaintance with macaroni manufacturers and whose qualifications as an unbiased and well-trained chemist marked him as the undisputed choice for this position.

Aims of the Association

Among the things that macaroni manufacturers are seeking to accomplish through the establishment of the Washington laboratory may be mentioned the following:

1. Standardization of macaroni and noodles.
2. Standardization of semolina from standpoint of gluten content and adaptability to manufacture.
3. Standardization of weights and sizes of packages and boxes.
4. Standardization of egg content in noodles.
5. Standardization of containers to facilitate shipment, minimize loss and damage in transportation and to insure proper preservation of contents.
6. Standardization of manufacturing methods tending toward quality production.
7. Study of macaroni importations with the view of securing proper tariff legislation to protect American manufacturers.
8. Passing on labels to see that they comply with pure food law.
9. Prosecuting cases against violators of pure food law.
10. Co-operating with Department of Agriculture to promote better sentiment between the department and manufacturers.
11. Elimination of artificial coloring in domestic macaroni, and exclusion of imported macaroni containing artificial coloring.
12. Chemical analysis of raw materials and finished products.

On July 1, Dr. B. R. Jacobs assumed his duties as director and started on the task of establishing a laboratory that will in time work out the problems enumerated above. The laboratory is located at 1731 H street N. W., Washington, D. C., and the director has at his command an efficient staff of assistants trained in work of this nature.

The National Macaroni Laboratory, officially known as the National Cereal Products Laboratory, will be given further consideration by the leading macaroni manufacturers, who will meet at a special convention of the National Macaroni Manufacturers' Association at Hotel Traymore, Atlantic City, N. J., Nov. 16.

The Problem of Returned Goods

Difficulties Met With By Margarin Manufacturer

By E. S. MAPP

Secretary, Wm. J. Moxley, Inc., Chicago*

EXPERIENCE has taught us that one of the most vitally important elements connected with the successful marketing and upbuilding of a margarin business is the condition in which the goods utimately reach the consumer—and one of the greatest fallacies is to stock your product with a merchant who gives your salesman an order when the only thought in his mind is to get rid of him. We believe every salesman should stand on his dignity and display reasonable intelligence when offering his product to a dealer.

A really good salesman can gather from his conversation with the dealer, and by the condition and age of the other brands carried, just what co-operation he can expect on his own particular brand.

Take, for instance, a salesman solicits the business of a dealer who already has in stock three, four, five or six diversified brands (and personally I have seen as many as fourteen brands displayed on one counter) and he has reason to believe through conversation and natural intuition that said dealer is marketing only 30 to 60 pounds per week of all brands collectively—yet he has stocked four or five times this quantity. What is going to happen to your brand? Unless something particularly attractive to the dealer is put forth in your sales material, is it not reasonable to suppose your brands or the greater portion of them are going to lie dormant along with the others, only to become deteriorated, and later on when the dealer has a complaint you are told your goods are off and he is losing customers, and you are expected to take the unsold portion back and allow full credit. This you eventually do, more so to safeguard your brands than through any sense of justice.

Assuming the housewife bought a pound from your case lying dormant so long, she naturally would not be satisfied with the quality of your product, would not reorder, you lose a customer on your brand forever without the slightest opportunity to defend yourself. Far be it from Mr. Dealer to explain that his margarin sales were small and he had made the error of carrying too many brands, thereby keeping none of them fresh. The housewife condemns your brand and tells the neighbor over the back fence all about her experience, prejudicing her unwarrantedly. The dealer does not and will not explain to her the cause of your brand not being satisfactory, he does not tell her he has had the goods on hand three or four weeks, neither does he tell her they have not been properly refrigerated while in his possession or in any way admitting his own shortsightedness as a successful merchant; or maybe a new user of margarin has this experience. Then all brands are condemned, then we have all lost the convert for whom so much money has been spent to obtain and the prejudice she has ignorantly harbored against margarin is strengthened tenfold.

No Returns of Butter

Take the butter industry. You will probably agree there are just as many brands of print butter on the market as there are of margarin. Do you see a merchant stocking from six to a dozen brands of identified print butter. No! Why? From the fact that he has been taught when he buys butter and it is fresh and sweet upon acceptance, that he owns it, and it is his until sold and not the creameries producing it, and if the same tactics were employed by the margarin makers and wholesalers and their salesman drilled along the same lines as the butter salesman, you would soon discover you had very little use for the column headed *"Returns by Retail Dealers."*

I know of a case where two tubs of creamery and three cases of margarin were delivered to a dealer and left on the sidewalk in front of his store. They were properly ordered and receipted for; the clerks were all busy at time of delivery. During a lull the proprietor suddenly discovered the purchase still remained on the sidewalk, when he abruptly called to a clerk, "Jake, bring those two tubs of butter in and put them in the icebox." He did not tell Jake to bring in the margarin. When the dealer was asked if it was his purpose to leave the margarin remain outside in the warm weather, his answer was that his money was tied up in the butter and he was not so particular about the margarin; it was returnable and that they were busy and would attend to that later.

How many of you gentlemen have had returned to you full cases never opened by dealers who were sold five cases or more when in reality should have been sold one case and probably a 10-pound case at that? But your energetic salesman talked him into ordering five cases on the theory that his advertising propaganda would readily move them, but they did not move before deterioration started to get in its deadly work. What was the result? One, two or three of the cases were returned you unopened. Granting various advertising mediums are very essential to the industry, is their pulling power not in many cases overestimated and abused by the salesman? Is it not far better for the factories and jobbers to educate the dealer to buy in small quantities and often rather than to overstock and have a portion go bad on his hands?

This returned goods evil is one of the most momentous barnacles the industry has to contend with. Adopt some method by which your goods can reach the consumer by a quicker route than through the dealer who is handling a dozen different brands and specializing on none. You will not only make for permanency but be heading on a straight road to make new margarin users and relieve that undue prejudice that each factory knows exists.

Condemns Consignment "Sales"

Another intolerable method responsible in part for the abominable returned goods menace is the consignment proposition. The specialty salesman approaches Mr. Dealer, sells him his advertising proposition, and asks permission to set a couple of cases on his counter with the em-

(Continued on page 38)

* An address delivered at the annual convention of the Institute of Independent Margarine Manufacturers in Chicago Aug. 6 and 7.

Making Uncooked Pork Products Safe for Food

Results of Series of Experiments by Department of Agriculture

THE U. S. Department of Agriculture has issued the following:

Hygienically, the custom of eating uncooked pork and pork products is regarded by medical specialists as very much to be discouraged; but the toothsome summer sausage, smoked sausage, pepperoni, pickled sausage, and a number of other dainties continue to tempt the American public to defy the physicians.

Facing this situation, the United States Department of Agriculture has conducted a long series of experiments to ascertain what treatment, other than cooking, will thoroughly destroy trichinae and render the foods safe for consumption. The result of the experiments is made public in Department Bulletin 880, just issued.

The experiments proved of double service. In addition to fixing the safety point in the various methods of curing pork without cooking, they cut down the time consumed in the processes in some cases as much as five days, permitting considerable saving in the cost of manufacture.

Effects Little Known

Prior to these investigations comparatively little was known concerning the effects of processes used in curing pork upon the vitality of trichinae, which cause the dread disease trichinosis.

It has been assumed as a governing principle, that the consumer is himself responsible for the proper preparation of fresh pork and pork products that are usually cooked before eating, but that the manufacturer is under obligations to make sure that pork products sold as cooked products are properly cooked, or, of a kind customarily eaten without cooking, to make sure that the products are free from live trichinae.

In the federal meat inspection regulations, it is therefore provided that products cooked in establishments under inspection, must be cooked in accordance with methods approved by the Bureau of Animal Industry, and further that products containing any raw muscle tissue of pork, if of a kind prepared customarily to be eaten uncooked, must either be subjected to sufficient heat to destroy the vitality of trichinae, or must be subjected to some other process which would accomplish the same purpose.

New Methods Devised

Most of the department's experimental work was carried out in cooperation with certain meat packing establishments in Chicago. The investigation selected the methods of preparing pork without cooking, that seemed likely to be efficacious in destroying trichinae, and at the same time suited to practical requirements of manufacture. Several new methods were devised.

These methods were tested by preparing the products from trichinous pork, and then feeding the finished product to experiment animals to see whether the trichinae survived. Detailed records were kept of every step of the process.

The investigation shows that pork products of the kinds customarily eaten without cooking may be rendered safe for consumption, so far as trichinosis is concerned, but that it is necessary to follow a special curing process adapted to each. Salt is an essential in most of the processes.

Sausages of moderate size have been rendered harmless by mixing not less than 3-1-3 pounds of salt with every hundred-weight of meat, followed by preliminary curing and then by drying. After the salt has been introduced, the sausages must be dried at least 20 days in a temperature not lower than 45 degrees Fahr. A period of five days is allowed for preliminary curing, which may be curtailed, provided the time in the drying room is correspondingly increased.

In the case of pepperoni, which are sausages stuffed in long, narrow, thin casings, it was found feasible to reduce the curing period to 20 days, of which at least 15 days must be given to drying.

Smoked sausage may be rendered harmless by being subjected to a preliminary cure and then smoked at temperatures ranging around 80 degrees F. for 40 hours, followed by drying for 10 days. Sausage smoked at a temperature of 125 to 130 degrees F., for a relatively brief period, following a preliminary curing period of six days, is rendered harmless without subsequent drying.

Two Methods for Ham

Hams are rendered free from trichinae by two methods. One is to cure them with dry salt—4 pounds or more to the hundredweight—for a period of 40 days, and then smoked or pale-dried for 10 days at a temperature not less than 95 degrees. The second method is to cure them on the basis of three days for every pound of meat, followed by 48 hours of smoking at a temperature of not less than 80 degrees, and finally by 20 days drying at a temperature not lower than 45 degrees.

Salt and suitable temperatures are the principal means of destroying trichinae. The former gradually undermines the vitality of the parasites, probably by withdrawing water from their tissues, and also perhaps by direct toxic action. Salt, furthermore, lowers the resistance of the larvae to heat and thus renders them susceptible to temperatures which otherwise would not prove fatal. Drying is also a decided factor in bringing about the destruction of trichinae.

Coffee Consumption Increases

MORE coffee was drank in the United States during the year ending June 30, 1920, than in any previous year on record, according to figures made public by the National Coffee Roasters' Association from the Bureau of Foreign and Domestic Commerce of the Department of Commerce. The period covered coincides with the first year of prohibition.

The total coffee consumption in Continental United States for this period was 1,358,000,000 pounds and the per capita consumption 12.7 pounds. This is a total increase of 399,000,000 pounds and a per capita increase of 3.71 pounds over the preceding twelve months. On a basis of forty cups to the pound the association estimates this increase at 16,000,000,000 cups of coffee.

Record Breaking Sugar Trade of the United States in Fiscal Year 1920

Average Per Capita Consumption in Country 90.6 Pounds Annually

(Prepared by the Division of Statistics, Bureau of Foreign and Domestic Commerce, Washington.)

NEW records were made in the sugar transactions of the United States with other countries during the fiscal year ended June 30, 1920, receipts from foreign countries and noncontiguous American territories amounting to 9,489,727,637 pounds and shipments thereto aggregating 1,458,680,026 pounds. Furthermore, although the uneven distribution of available supplies of sugar in the United States (due in part to the transportation situation) led to high retail prices in many localities, it seemingly did not restrict the total consumption, for the average per capita consumption in continental United States for the fiscal year just ended likewise established a new record—90.6 pounds.

The total importation in the fiscal year 1920 comprised cargoes from 40 foreign countries, in addition to receipts from the Virgin Islands, the Philippines, Hawaii, and Porto Rico. As in the fiscal year 1919, when the Sugar Equalization Board stated that large quantities of sugar were bought in Cuba in 1918 by British interests, brought into the United States for refining, and then shipped abroad, similar transactions enter into the statistics for 1920. These exports and imports, however, practically counterbalance.

Large Increase in Latin American Trade

The total imports of cane sugar into the United States, exclusive of receipts from Hawaii, Porto Rico, and the Philippines, amounted to 7,532,310,606 pounds in the fiscal year 1920, against 5,621,031,787 in 1919 and 4,944,815,410 pounds in 1914; or an increase of 34 per cent over 1919 and of 52 per cent over the pre-war year 1914.

Cuba was the chief source of supply in 1920. The imports from that country of 6,905,709,612 pounds broke the former high record of 5,488,711,032 pounds in 1919. Other large increases in the number of pounds of sugar imported in 1920 over the previous year are: Dominican Republic, from 4,390,594 in 1919 to 146,638,847 in 1920; Central America, from 11,319,415 to 66,164,091; Peru, from 10,377,825 to 75,710,043; and other South American countries, from 20,849,450 to 133,158,013. The gain in the last-mentioned instance is largely due to receipts of 100,518,104 pounds from Brazil. Mexico contributed 62,670,943 pounds in 1920.

Other notable imports of sugar during the fiscal year just ended include 24,871,325 pounds from Canada, 27,481,913 pounds from Hongkong, 9,124,429 pounds from British East Africa, and 35,722,787 pounds from European countries. The cane sugar from Belgium, Netherlands, and England includes some items of foreign sugar refined in the United States, exported with benefit of drawback, and reimported with duty collected equal to the drawback. The greater part of the remainder from these countries consists of Java sugar.

Cane Sugar Imports

The amount and value of the receipts of cane sugar from all countries in 1920 were:

Countries	Pounds	Value
Belgium	4,829,718	$ 826,086
Denmark	525,460	47,067
Netherlands	13,920,918	2,460,488
England	16,446,691	2,950,535
British Honduras	2,589	313
Canada	24,871,325	3,159,142
Costa Rica	6,844,667	749,472
Guatemala	16,622,225	1,855,338
Honduras	16,558,227	1,907,305
Nicaragua	13,389,187	1,345,480
Panama	2,162,425	355,094
Salvador	10,587,360	1,296,945
Mexico	62,670,943	10,093,676
Newfoundland and Labrador	120,000	14,857
Barbados	391	28
Jamaica	783,816	143,046
Trinidad and Tobago	1,821,320	324,646
Other British West Indies	6,610,339	385,564
Cuba	6,905,709,612	596,275,578
Virgin Islands of the United States	12,323,710	1,270,435
Dutch West Indies	12,515,465	1,705,693
Haiti	3,900,642	592,333
Dominican Republic	146,638,847	18,545,593
Argentina	244	33
Bolivia	3,715,474	217,241
Brazil	100,518,104	14,396,781
Chile	476,994	89,575
Colombia	1,639,667	217,437
British Guiana	20,509,722	2,256,027
Dutch Guiana	175	18
Peru	75,710,043	8,163,713
Venezuela	6,297,633	880,586
China	2,590	264
Kwantung, leased territory	250,000	40,978
British India	2,358,701	350,198
Dutch East Indies	2,402,214	446,064
Hongkong	27,481,913	4,761,871
Japan	1,965,818	332,302
Australia	1,008	83
Philippine Islands	45,387,719	4,407,505
British East Africa	9,124,429	1,714,087
Total	7,577,698,325	$684,579,477
Noncontiguous territories:		
Hawaii	1,056,023,998	118,961,556
Porto Rico	837,735,200	98,802,436
Grand total	e9,471,457,523	e$902,343,469

e Subject to minor corrections.

Arrivals of sugar from the Philippines declined from 210,950,760 pounds in 1919 to 45,387,719 pounds in 1920. It is understood that this decrease is offset by shipments made from the islands to China, Hongkong, and Japan. Hawaiian sugar receipts dropped from 1,215,594,766 pounds in 1919 to 1,056,023,998 pounds in 1920. Arrivals from Porto Rico for the last fiscal year were 837,735,200 pounds—a material gain over the 703,286,023 pounds received in 1919.

Imports of Beet Sugar

A new development in the sugar trade is the recent importation of beet sugar, 14,270,114 pounds, valued at $2,435,110, reaching the United States from foreign countries since January, 1920. There were no imports the first half of the last fiscal year, and only 1,180 pounds, worth $108, were imported in 1919. Of the 14,270,114 pounds imported in 1920, 331,834 pounds, valued at $49,655 arrived in March from Belgium; 13,126,180 pounds, invoiced at $2,293,406, from Germany in June; and the remainder, 812,100 pounds, worth $92,049, from Canada, mostly during May and June. These returns credited to Germany originated in Czechoslovakia, but were shipped from the port of Hamburg. Unfortunately, some of the items included in this class were reported with cane sugar and the corrections did not reach Washington in time to make the necessary changes in the totals of beet and cane sugar imported until after the June Monthly Summary was in print. Imports of cane and beet sugar by countries during the month of June, with the correct totals, follow:

Countries	Pounds	Value
CANE		
Belgium	1,507,288	$ 327,808
Netherlands	3,692,874	833,071
England	10,362,962	2,049,310
British Honduras	180	36
Canada	11,030,144	1,357,672
Costa Rica	1,459,812	184,374
Guatemala	3,218,204	386,445

Honduras	1,921,000	254,884
Nicaragua	1,645,100	211,512
Panama	933,020	170,123
Salvador	2,523,872	354,635
Mexico	15,339,938	2,739,226
Newfoundland and Labrador	120,000	14,857
Jamaica	783,816	143,046
Trinidad and Tobago	896,284	170,830
Other British West Indies	425,700	48,956
Cuba	754,307,970	119,809,709
Dutch West Indies	3,744,516	673,089
Haiti	900,385	174,846
Dominican Republic	48,192,694	8,398,566
Brazil	33,235,487	5,663,828
Chile	476,994	89,575
Colombia	998,540	92,355
British Guiana	991,200	120,307
Peru	14,997,552	2,592,552
Venezuela	2,196,314	360,642
China	2,590	264
Kwantung, leased territory	250,000	40,978
British India	2,358,701	350,198
Dutch East Indies	2,400,214	445,864
Hongkong	26,120,576	4,601,857
Japan	1,965,498	332,250
Australia	1,008	83
British East Africa	9,124,429	1,714,087
Total cane sugar	958,124,862	$154,707,835
BEET		
Germany	13,126,180	2,293,406
Canada	500,000	44,706
Total beet sugar	13,626,180	$2,338,112

France the Chief Buyer

The total domestic exports of 1,444,030,665 pounds of sugar from the United States to foreign countries in 1920 exceed by 328,165,504 pounds, or nearly 30 per cent, the corresponding figure for 1919. There was an increase in the total value of 61 per cent—from $81,569,660 in 1919 to $131,771,308 in 1920. Exports to France of 698,798,020 pounds broke the previous high record of 478,967,887 pounds in 1917. Pre-war exports of sugar to France were insignificant, amounting to only 1,000 pounds in the year ended June 30, 1914. In the six-year period since that date France has led all countries as a market for American sugar with aggregate shipments of 2,424,045,466 pounds, surpassing those to the United Kingdom of 2,154,606,913 during the same period.

The increased output of beet sugar in Europe, particularly in Belgium and Czechoslovakia, relieved to some extent the calls upon this country for cane sugar, as shown by the decreased shipments in 1920, as compared with 1919, to Belgium, Italy, Spain, and Gibraltar, the last-named being a transshipment port for Near Eastern countries.

Large increases in the quantity exported in 1920, as contrasted with 1919, occurred in the case of Norway, which took 74,361,248 pounds, against 17,020,101 pounds in 1919; Switzerland, 60,193,687 pounds, against 2,268,210 pounds in 1919; and Greece, 50,403,883 pounds, as compared with 9,328,320 pounds in 1919. Gains on a smaller scale are shown in the sugar exports to Denmark, the West Indies, Netherlands, the Philippines, and British and French Africa. The trade with Canada has been reversed. Not only did exports thereto decline from 59,671,218 pounds in 1919 to 965,908 pounds in 1920, but the United States imported therefrom 24,871,325 pounds of cane sugar and 812,100 pounds of beet sugar during the last fiscal year.

Exports to Principal Countries in 1920

The quantity and value of the refined sugar (including maple sugar) shipped to the principal countries in 1920 were:

Countries	Pounds	Value
Belgium	11,038,605	$1,094,063
Denmark	7,002,624	651,593
France	698,798,020	62,046,336
Gibraltar	36,777,900	2,876,724
Greece	50,403,883	4,633,981
Italy	343,037	41,269
Netherlands	1,331,930	126,196
Norway	74,361,248	7,579,019
Spain	39,812,310	4,727,907
Switzerland	60,193,687	5,635,081
United Kingdom	363,236,359	31,270,809
Canada	965,908	148,180
Panama	438,650	49,538
Mexico	9,415,162	1,011,237
Newfoundland and Labrador	1,322,389	180,669
West Indies	2,324,876	294,190
Uruguay	11,214,800	973,395
Philippine Islands	5,353,960	572,450
British Africa	6,746,071	1,018,262
French Africa	4,642,575	623,523
Other countries	58,306,671	6,216,886
Total to foreign countries	1,444,030,665	$131,771,308
Noncontiguous territories:		
Alaska	5,566,893	701,018
Hawaii	916,220	121,037
Porto Rico	1,262,033	126,868
Reexports of foreign sugar	6,904,215	350,310
Grand total	1,458,680,026	$133,070,541

Shipments to Alaska increased from 4,334,504 pounds in 1919 to 5,566,893 pounds in 1920, to Hawaii from 631,812 to 916,220, and to Porto Rico from 276,172 to 1,262,033. The re-exports of foreign sugar from the United States also rose from 3,017,199 pounds in 1919 to 6,904,215 pounds in 1920.

Production, Available Supply, and Prices

The production of cane sugar in continental United States for the year 1919-20 is estimated at 241,998,400 pounds and of beet sugar at 1,452,902,000 pounds. This production, imports from foreign countries, and receipts from noncontiguous territories together give a total of 11,180,628,037 pounds available in the markets of the United States. Deducting from this amount the exports from continental United States of domestic sugar, 1,444,030,665 pounds, the re-exports of foreign sugar, 6,904,215 pounds, and shipments to noncontiguous American territories of 7,745,146 pounds, makes the net amount retained for consumption in the United States 9,721,948,011. Using the revised figures of August 1, 1920, issued by the Treasury Department, of the estimated population of continental United States of 107,239,000, this works out a per capita consumption of 90.6 pounds in 1920, against 82 pounds in 1919.

The average import price of sugar has increased from 2 cents per pound in 1914 to 5.3 cents per pound in 1919 and 9 cents per pound in 1920. This is an increase in 1920 of 70 per cent over 1919 and of 350 per cent over 1914. The average price per pound of sugar from Hawaii was 3 cents in 1914, 6.2 cents in 1919, and 11.3 cents in 1920, and from Porto Rico 3.1 cents in 1914, 6.8 cents in 1919, and 11.8 cents in 1820.

The average export price of sugar was 9 cents per pound in 1920, against 7.3 cents per pound in 1919 and 3.6 cents in 1914.

June the Record Price Month—New Crop Estimates

The monthly average price of 16.1 cents for imported cane sugar was higher in June, 1920, than for any previous month of the fiscal year. From 5.6 cents in June, 1919, it rose to 6.5 cents by December, and jumped to 10 cents in January and to 12.4 cents in May of the current year. The monthly average price of refined sugar exported from the United States advanced from 7.7 cents in June, 1919, to 8.2 cents for December, dropped to 8 cents in February, rose to 11 cents in March and 11.3 cents in May, and dropped to 10.4 in June of 1920. The import price of raw sugar corresponds with the wholesale price thereof in the country from which it is shipped. The export price of refined sugar is the actual cost of the sugar at the time of exportation in the ports of the United States from which it is shipped.

The Bureau of Crop Estimates has reported an area of 533,500 acres under sugar cane (no estimate of yield yet available); and of 978,500 acres in sugar beets, with an estimated production of beet sugar of 2,004,000,000 pounds for the crop of 1920-21. Willett & Gray's estimate of the cane sugar production is 241,998,400 pounds.

How Whole Wheat Biscuits Displaced An Entire Line of Crackers

Manufacturer Found a Big Market Ready for His Product

By EDWARD. T. TANDY

(In Printer's Ink)

IT frequently happens that advertising enables a manufacturer to effect considerable saving by bringing about a reduction in the number of the varieties of his product. Often it happens that one success evolves an entire family of successes. It is rare, however, that the supposed Ugly Duckling of the family by itself alone converts a struggling business into a successful one.

Yet that is what the Wheatsworth Bircuit has done for the F. H. Bennett Biscuit Co., of New York. At any time during the two years of experimentation which produced Wheatsworth, it certainly did look—to everybody except its devoted and determined parent—as though the 100 per cent whole-wheat biscuit would never come to anything. Then Wheatsworth became not only an actuality, but an instant and big success—and quickly it ousted all the other members of its family.

F. H. Bennett was for many years with the National Biscuit Company. Eventually he started in business for himself as a biscuit manufacturer, making an entire line of table crackers, animal, soda, 5 o'clock tea, iced, sweet, every popular kind, to a total of close upon a hundred varieties. He made no attempt to get into the package end, but sold in bulk to the grocers and did a good business. But competing with the big fellows by cutting prices to the little fellows was a struggle at best and always precarious, for it was, of course, impossible to build up anything like consumer good will. The price, and with it the business, was always at the mercy of the buyers.

Then suddenly, about ten years ago, Mr. Bennett was, as his friends put it, "bitten by the brown bread bug." As a matter of fact, he was looking for something really new in the way of a cracker—something that would be at once both his own and advertisable—something upon which he could build up a real business and which would become independent of price-cutting and its never-ending battle. He had become a confirmed believer in the whole-wheat idea. He decided that the something he needed was a whole-wheat biscuit.

Mr. Bennett was convinced that if he got such a biscuit he would have a biscuit that would be a perfect product in every way for his purpose. It would be new. It would be exclusive. It would be delicious. It would be a complete and perfect food. And, unquestionably, it would be advertisable to the highest degree. He tried to make such a cracker, but apparently it could not be done.

He Kept on Trying

A little thing like that could not deter Mr. Bennett. He determined to keep on trying. The secret of the baking difference between whole-wheat flour and white flour was hard to discover, and the way to overcome it was harder still to find. The problem was solved only by gradual approach, by repeated experiment. These experiments were carried out by Mr. Bennett and his foreman, both of them old hands at biscuit making. Nearly every night for two years they went home disappointed. But they got it at last. What is more, they had invented something that could be patented.

Meanwhile, Mr. Bennett had made the acquaintance of a well-known pure food expert, himself a whole-wheat enthusiast. Mr. Bennett's first successful cracker was a fifty-fifty one—half whole-wheat flour, half white flour. "No good, said the expert. Eventually a seventy-five-twenty-five cracker, only one-quarter white flour, was successfully baked. "Better, but still no good!" the expert ruled. At last came the cracker with no added white flour. But Bennett's joy was quickly dashed away again, at any rate for a time.

Ground His Own Wheat

"How do you know that it is really 100 per cent whole-wheat!" "I know it," returned Bennett, "because I did the making and baking myself, and the flour I used was just as I bought it." "That's no proof that it is 100 per cent whole-wheat," the expert asserted; "let's examine the flour and see." And the flour proved to be only "alleged" whole-wheat flour.

Mr. Bennett was sufficiently certain that he had found the correct method of mixing and baking. In order to be quite sure, also, about the flour, he bought a mill and ground his own flour. "Wheat's worth it!" the enthusiast said. And there sprang up the name of the cracker.

At first the Wheatsworth Biscuit was only another addition to the big cracker family of a hundred varieties. But gradually the less-called-for kinds were dropped one by one. Within four years Wheatsworth had crowded out the entire family and was even demanding a larger factory for itself alone. Twice since then the factory has been enlarged, and is now being enlarged again—and the Wheatsworth Biscuit is the only cracker now made by the company.

By the time that the whole-wheat cracker was ready to be marketed, an improved carton had been devised, together with the necessary machinery for doing all the work of packing and sealing automatically. It is claimed that this carton keeps the biscuits as fresh as even a sealed tin could. It does not rely solely on the folding of itself and lining to keep the air out—it opens only at the ends, and those ends are made air-tight by being gum sealed.

To meet any complaint that may arise, every carton is automatically embossed on an end flap as it is packed by the machine. Reference to the record belonging to the embossed letters and number tells the entire history of the cracker until it left the factory.

Very little advertising could be done until the size of the factory had been increased. Breaking into New York presented no difficulty to Wheatsworth. Larger space is now being used in the New York newspapers and, on the reputation formed in New York, backed by sampling, the product is selling in every city in the East and Middle West.

(Continued on page 35)

Enormous Food Consumption Proof of America's Prosperity

Annual Production in United States Equal to 3½ Tons Per Family

AN estimate of our food consumption "is not a mere stock-taking of our national appetite, but a test of our strength as a nation," writes Homer Hoyt in *The Annalist*. Statistics, he says, show "that the United States is the banquet table of the world." Approximate figures can be obtained that will give an idea of America's food consumption as compared with that of other nations. We read:

"If all the food produced in the United States were divided equally among American families, each family of five would have three and one-half tons per annum, which would give each adult member of the family one ton of food a year. Mere absolute figures, however, indicate little, for it is literally true that the more we eat the more we think we want. The Department of Labor has constructed a model budget made up of actual quantities of food consumed by workingmen's families, and it found that 1,275 pounds of solid food and five hundred pounds of milk per man per annum was amply sufficient for health and comfort. But this standard of what Americans consider the very minimum of health and comfort is far above the minimum of existence. For the Japanese national diet shows an average annual food consumption of only 905 pounds per man per annum, while many classes of Russia are keeping up a spark of life with less than three hundred pounds of food annually for each adult member of the population. Again, compare the American annual solid food ration of 1,900 pounds for the adult with the 1,500 pounds furnished the soldiers of the A. E. F., which enabled them to go through the maximum possible physical effort and gain twelve pounds per man besides.

"The average American adult thus eats or wastes 1,900 pounds of food a year, contrasted with 1,500 pounds for the soldiers of the A. E. F., 1,275 pounds allowed by the budget of the Department of Labor, 905 pounds for the Japanese, and three hundred pounds for many of the hapless victims of the Bolsheviki.

"The American adult meat consumption is two hundred and eighty pounds annually, contrasted with two and five-tenths pounds for the Japanese. American grown - ups have one hundred and twenty pounds of suger every year, contrasted with fourteen pounds for the Japanese. We eat two hundred and fifty pounds of fruit per annum, compared with thirty pounds for the average Japanese. White bread, undiluted by bran, is our staff of life, and we eat bread, cake, and cereals to the extent of about four hundred and fifty pounds per man per annum, while the Japanese is nourished mainly by his annual ration of two hundred and eighty-two pounds of rice. Meat, fruits, white bread, and sugar may not be the best foods, but they are the most luxurious foods, and their presence in such abundance on American tables indicates how well off we are. For, in a pinch, we could substitute vegetables and coarse cereals for our expensive meats and cut the cost of living in half!"

A table is given comparing various standards of food consumption. It shows "how far above the margin of subsistence we are, for the amount of food consumed by the Japanese has been sufficient to keep them in physical and mental efficiency and the surplus above that indicates how far a move we are from even the suspicion of want." These are the figures Mr. Hoyt presents:

FOOD CONSUMPTION PER MAN PER YEAR
(Pounds)

	Average United States*	A. E. F. Ration†	Standard Budget Dept. of Labor‡	Japanese National Diet▲
Meat	280	456	140	2.5
Fish	21	..	21	50.2
Eggs	33	..	30	2.1
Legumes	50	56	28	35.4
Bread and cereals	450	410	340	309.4
Vegetables	600	456	420	459.4
Sugar	120	73	63	14.1
Fruit	250	27	200	29.7
Other foods	100	50	33	..
Total exclud. milk	1,904	1,528	1,275	902.8
Milk	760	12	500	2.2
Total	2,664	1,540	1,775	905.0

*Estimated by author from statistics of consumption of food in the United States. These figures include food wasted.

†From "America's Munitions," by Benedict Crowell, Government Printing Office, 1919, p. 438.

‡From *Monthly Labor Review*, June, 1920, Volume X, No. 6, p. 3.

▲From "Standard of Living in Japan," by K. Morimoto, Johns Hopkins Press, 1918, p. 52.

Can the average workingman in this country pay for this amount of food? The writer in *The Annalist* thinks he can, and remarks:

"The cost of the food on the annual menu which the Bureau of Labor says is ample for health would be about two hundred and forty dollars per adult per annum or eight hundred dollars per family at the high prices prevailing in this year of 1920. Since the average American workingman's income is $1,500, he has enough to keep the wolf away from the door. The A. E. F. ration cost $165 per man per annum, while the Japanese adult could satisfy his appetite for $24 a year in 1914 in Tokyo, and at present Japanese prices for about seventy-five dollars. The poor Russian workman with a monthly income of four thousand rubles, which had a pre-war value of two thousand dollars, can now purchase only about ten pounds of black bread and a pound of butter a month with that sum, and it is little wonder that many have died of starvation because of their inability to eat paper money. People are dying in Europe for the lack of what 10 cents a day in American money would buy. A loaf of white bread a day would be a luxurious diet to millions at the present moment.

"But American prosperity is shown in another way. Americans spend only 43 per cent of their income for food, while the Japs use 60 per cent of their income for the same purpose. We could easily spend more for food if necessary."

Ward Baking Co. Book on "Bread Facts"

The Ward Baking Co., New York, has prepared and published an interesting and instructive book on bread making, which gives data on the food value of bread, hints for the baker on how to make better bread, a chapter on "Applied Science at the Bakery" and other kindred subjects. The book is well printed, illustrated and bound in a stiff paper cover. Copies will be sent without charge to those interested. Distribution among a large number of bakers has already been made.

The Need of Foreign Markets to the Canned Food Industry

By J K. ARMSBY

President, California Packing Corporation

THE canning of foods is one of the seven wonders of modern industry, and it is on the Pacific Coast where this industry has, from insignificant proportions, steadily increased until it is one of the most important factors in the canned foods industry of the world. Last year, the state of California alone shipped from its borders, either by rail or by water, approximately $225,000,000 of canned fruits, vegetables, fish and milk.

Canned foods form part of the necessary diet of the civilized world. Their use made possible the completion of the great engineering feats of our present civilization; they made possible the great enterprises of exploration and of discovery, culminating in the discovery of both the North and the South Poles, and that they were necessary in the conduct of the great world war is self-evident.

No nation can exist within its own boundary, or upon its own resources. The United States can exist neither as an importing nation nor as an exporting nation. There must be an equalization, either visibly or invisibly, of imports and exports. Foreign trade is so necessary to our national life that every factor or industry must be contributory thereto.

Foreign markets are as necessary to the canned food industry as they are to any other commodity produced in the United States. Any limitation placed upon, or any impediments placed in the way of the development of the foreign markets for canned foods tends to decrease the stability of American industry as a whole.

The farmer in the interior states, the rancher, the dairyman, the gardener, the orchardist, the fisherman, the manufacturer, the financier, and steamship and railroad companies are all vitally interested in the development of foreign markets on canned foods. In the case of the farmers of this country, no inconsiderable portion of the life and prosperity of this nation rests upon their shoulders. To them the development of foreign markets is particularly vital, for in many instances the productivity of their soil depends upon the fertilizers which are brought from foreign markets. To get this fertilizer to the farms as cheaply as possible we must have return cargoes to send back.

Every industry, every enterprise, every individual in the United States is either directly or indirectly interested in the development of foreign markets, and the canned foods industry must contribute its quota to foreign trade.

The United States is compelled of necessity to import certain primary commodities from foreign countries. Among these is tin, from which is made that magic container known as the tin can. What wonderful stories of world-wide adventures, romance and achievement the genie of the tin can might whisper in the ears of a modern Scheherazade!

Sugar is another commodity which must be imported in very large quantities. The ships which bring tin and sugar must also have return cargoes, otherwise there would be no stabilization of freight rates. Operating ships in ballast is unprofitable.

Unfortunately for the canned food industry of the United States, many foreign countries regard these wholesome commodities as luxuries, and so classify them in their tariff schedules. Because of this seemingly erroneous classification, a great many markets are practically cut off to the United States. The effects of this erroneous classification prevent canned foods from participating in our foreign trade to the extent which the industry should, because of its size and potentialities. A further effect is to deny the use of reasonably cheap and wholesome commodities to a very large number of people who would be benefited by their use.

With the possible exception of Cuba, the more important countries of Latin America have so classified canned foods in their tariff schedules as to make these commodities bear a rate of taxation entirely disproportionate to other commodities. In some of the South American countries, the customs duties approximate 400 per cent. of the F. O. B. United States valuation. This means that the retail selling price is necessarily so high as to restrict the sale of the commodity, because only a limited number of people having the purchasing power are enabled to buy, and this type of people would buy regardless of the price.

That the matter of tariff has a great deal to do in the developing of foreign markets is evident from the case of Cuba. Prior to 1903 the total quantity of canned fruits exported by the United States to Cuba was not in excess of $12,000 annually. Following the favorable tariff revision of 1903, this market has steadily increased until today Cuba imports over $1,000,000 of canned fruits from the United States annually.

Another important example is that of Great Britain, where the tariff is favorable. In the calendar year of 1919 Great Britain imported from the United States $35,000,000 of canned fruits. These figures are from the statistics published by the Bureau of Foreign and Domestic Commerce of the United States.

By way of comparison, the countries comprising South America imported during 1918, which is the latest year for which detailed statistics have been published by the United States Government, less than $150,000 worth of canned fruits.

Exports of Breadstuffs, Meats, Cotton, Etc., For August

The following statement of exports of domestic breadstuffs, cottonseed oil, meat and dairy products, cotton, and mineral oils from the United States during August and for the eight months ended August has just been completed by the Bureau of Foreign and Domestic Commerce, Department of Commerce:

Exports by groups and principal articles.		August— 1920	August— 1919	8 months ending August— 1920	8 months ending August— 1919
EXPORTS BY GROUPS					
Breadstuffs	dollars	115,988,389	75,116,684	634,962,508	638,099,532
Cottonseed oil	pounds	2,663,330	9,220,628	108,117,437	155,047,040
	dollars	576,616	1,997,833	24,611,708	32,187,566
Meat and dairy products	dollars	24,257,578	85,969,713	382,379,770	905,029,985
Cotton	bales	146,668	479,058	3,875,438	4,166,668
	pounds	74,767,391	242,613,960	1,982,687,809	2,137,768,967
	dollars	28,051,552	81,342,841	820,201,689	674,979,433
Mineral oils	gallons	248,648,813	181,438,064	2,025,812,508	1,517,427,864
	dollars	48,679,856	26,594,885	347,627,254	214,612,963
EXPORTS BY PRINCIPAL ARTICLES					
Barley	bushels	2,376,542	6,468,651	9,130,146	28,713,814
	dollars	3,403,509	9,924,030	14,799,261	40,043,492
Corn	bushels	781,271	716,142	10,509,710	6,627,032
	dollars	1,373,132	1,432,087	17,449,642	11,355,048
Oats	bushels	671,138	4,673,354	10,616,950	39,870,301
	dollars	778,132	4,120,002	10,520,357	33,323,468
Rye	bushels	5,082,819	348,028	41,481,106	26,787,000
	dollars	11,955,843	1,017,495	89,178,990	51,793,801
Wheat	bushels	27,569,982	12,940,581	99,651,041	92,673,999
	dollars	80,135,169	31,397,917	278,506,732	223,909,104
Flour	barrels	1,106,707	1,637,668	15,255,468	19,912,244
	dollars	13,445,914	18,108,444	171,550,568	221,688,708
Beef, canned	pounds	1,231,070	2,894,361	23,103,547	47,641,617
	dollars	272,680	1,086,944	5,630,308	18,465,485
Beef, fresh	pounds	343,352	8,077,346	82,525,047	114,294,528
	dollars	61,846	1,878,033	16,473,061	26,967,448
Beef, pickled, etc	pounds	2,152,982	2,494,113	17,527,146	29,617,560
	dollars	253,883	510,637	2,567,038	6,152,225
Oleo oil	pounds	3,660,931	8,188,148	43,451,756	48,938,601
	dollars	676,972	2,633,090	10,874,371	14,145,420
Bacon	pounds	23,333,156	84,150,798	418,790,017	952,354,668
	dollars	5,582,362	28,331,502	105,297,396	301,801,324
Hams and shoulders	pounds	9,360,469	40,147,727	141,772,135	532,966,870
	dollars	2,703,668	13,427,284	38,612,336	169,792,870
Lard	pounds	31,020,802	49,032,878	364,353,218	577,172,668
	dollars	6,591,629	17,587,080	88,727,874	180,031,106
Neutral lard	pounds	1,177,496	2,043,388	17,393,544	18,712,477
	dollars	264,247	749,138	4,421,093	6,233,398
Pork, pickled	pounds	2,257,511	2,117,796	26,727,150	18,487,059
	dollars	416,657	561,642	5,568,998	4,783,345
Lard compounds	pounds	1,561,344	7,420,555	20,362,348	111,360,703
	dollars	337,235	2,071,773	5,023,176	27,783,563
Milk, condensed, etc	pounds	25,638,722	65,811,556	335,270,413	554,443,500
	dollars	4,361,354	9,615,261	51,608,864	78,552,583
Crude mineral oil	gallons	22,383,393	8,054,172	218,310,737	77,613,246
	dollars	2,256,241	782,874	17,820,285	4,761,321
Illuminating oil	gallons	74,571,208	84,007,054	555,516,719	647,690,910
	dollars	12,566,076	10,559,751	84,995,972	75,269,700
Lubricating oil	gallons	34,248,234	20,738,229	270,455,212	180,184,052
	dollars	13,109,015	6,162,014	96,209,142	56,699,164
Gasoline, naphtha, etc	gallons	58,661,151	29,587,503	431,309,099	236,858,238
	dollars	16,093,269	7,321,882	114,217,652	58,280,263
Residuum, fuel oil, etc	gallons	58,784,827	39,051,106	550,220,741	375,081,418
	dollars	4,646,255	1,768,360	34,384,203	19,602,515

Canadian Wholesalers Are Under Charges

THE Government of Canada has begun suit against the wholesale grocers of the Dominion for alleged combination in restraint of trade. The action which was filed recently in Toronto by the Provincial Attorney General's Department is the outcome of investigations made by the Board of Commerce and is to determine whether the alleged combine and price fixing is legal or not. The defendants are the Canadian Wholesale Grocers' Association and T. H. Kinnear, A. H. Pafford, H. C. Beckett, H. W. Chamberlain and A. C. Pyke, officers of the Wholesale Grocers of Ontario; Thomas Kinnear & Co., W. H. Gilliard & Co., Castle, Ltd.; E. W. Gillett Company, Ltd.; W. C. MacDonald, Inc.; St. Lawrence Starch Company, Ltd., and Canada Starch Company, Ltd.

It is charged by the Dominion Government that the membership in both the Canadian Wholesale Grocers' Association and the Wholesale Grocers of Ontario is limited to wholesalers who are approved by the members of the executive committee doing business in the applicant's territory and that the associations attempt to restrict the wholesale grocery trade to their own members.

The Attorney General also charges that members of the association have agreed to fix and regulate a non-competitive price for a number of commodities through all stages of sale from the manufacturer to the retail dealers.

The associations are charged with refusing to handle goods of manufacturers who issue list prices and at the same time sell to retailers, pledging themselves not to buy from any manufacturer (except specific and definitely arranged cases agreed to by the association) who will not confine their sales to the legitimate wholesale trade and exclude competition in certain brands of goods on the grounds that in a free market, as stated in such resolution, "the lowest price must rule" and "without some definite instructions from the manufacturer with regard to the sale of proprietary lines, the trade unanimously realize that one cut leads to another and that eventually, while the selling price would be uniform, it would be at a uniform price without any margin whatever to the wholesale trade."

Steady Demand May Assure Production of Corn Oil

CORN oil appears to have established itself as a satisfactory product for which there will be a steady demand, according to Department Bulletin 904 recently issued by the United States Department of Agriculture. That the oil can always be produced seems assured by the fact that it is a by-product of the manufacture of certain staple corn products, and it is only in case of an overproduction of fats and oils that it might be discontinued and the germs disposed of as feed. Such a situation seems improbable, however, and at the most would doubtless be only temporary.

As to the utilization of corn oil, it is believed that within a few years the oil will be used almost entirely for edible purposes, except only what is of such poor quality as to make its refining unprofitable. The sale of the oil in retail packages will very likely be further developed, and its use by bakers is also likely to increase.

The amount of corn oil used for edible purposes in the future will be determined by the quantity available rather than by any question as to its utility. At present some bakers, while admitting that it is suitable for their products, use cottonseed oil because the supply of corn oil fluctuates so that it is not always obtainable in sufficient quantities.

Utilization of Extracted Tomato Seeds

Canners Can Derive Profit from What Is Now a Waste Product

THAT much valuable material is being wasted annually by throwing away tomato seeds extracted in pulping, soup, catsup, and canning plants, is indicated by investigations made by the United States Department of Agriculture.

Department investigators have found that more than 1,000 tons of seed are thrown away annually in northern tomato-pulping plants, with large enough output of seed to pay for shipping. and that they may be made into edible oil and stock food worth about $86,000 (December, 1919). Cost of collecting and preparing the seed is estimated at about $35,000, including all proper charges, and the cost of the necessary equipment is given at not to exceed $50,000.

In addition, the same plant, which would run not more than five months in the year, could be used for the handling of grape seeds and pumpkin seeds, which would distribute the overhead and cut down the cost of manufacture of the tomato-seed products.

One-half of one per cent of a tomato consists of the seeds after they are dried. In 1918, the larger pulping stations of 10 Eastern Central States handled 205,000 tons of tomatoes, giving 1,026 tons of seeds. The total quantity, including all the smaller plants, is estimated at 412,000 tons of tomatoes for the same year, but the smaller number is used for practicable purposes.

Yield Two Commercial Products

By proper treatment tomato seeds may be made to yield two important commercial products—fixed oil, and press cake or meal. Two important steps are involved in preparing tomato seed for oil production—the separation of the seed from the wet waste and the drying of the seed. Effective processes have been worked out at the department's experimental farm at Arlington, Va.

Two methods are used for obtaining oil from oleaginous seeds, pressure and solvent extraction. A yield of about 17 per cent of oil can be expected from tomato seed by means of a perfectly adjusted expeller operating at its greatest efficiency. Solvent extraction gives slightly more than 20 per cent, but the oil does not bring as high a price as pressed oil. The former was estimated in 1919 to be worth 16 cents a pound, and the oil product of 1,000 tons of tomato seed worth $54,400. The latter was rated at 14½ cents and the product worth $58,000.

The remainder of the seed is saved in press sake or meal, practically without loss of substance. Where the oil is produced by the first process, the meal residuum is valued at 2 cents a pound, with a gross meal value of $33,200 for 1,000 tons of seed. By the solvent process, the resultant meal is valued at 1¾ cents a pound and the total value at $28,000. Cost of recovery by the first process is given at $52,181 considering all expenses, and by the second, $51,186, leaving profits of $35,419 and $34,819, respectively.

The Methods or Handling

Two methods of handling are recommended, one for the extraction of wet seed at the pulping plants and shipment to a few central drying plants; the other involves drying the seed at each pulping station. The freight charges in the first case would be about three times those entailed in the second case. The latter method is favored by specialists of the United States Department of Agriculture, who suggest that a co-operative plan of manufacture by an association of canners and packers, of which all tomato-pulping concerns are members, would perhaps be the most feasible method for the utilization of the waste, not only from tomatoes but from other products as well.

Costs of assembling wet and dry tomato seeds are computed for four suggested utilization centers—Chicago, Indianapolis, Philadelphia and Westfield, N. Y.

The utilization of agricultural waste of this character for the production of commodities of much commercial value is suggested as a conservation measure worthy of careful consideration.

Food Trade Defends the Use of Price Guarantee

Representatives of Manufacturers and Wholesalers Testify

DEFENSE of the guarantee against price decline as a necessary trade practice was made by some of the food interests at recent hearings in Washington before the Federal Trade Commission.

W. T. Nardin of St. Louis, of counsel for the Helvetia Milk Condensing Co., said that the condensed milk industry had been able to meet seasonal fluctuations in orders and maintain a constant production only by the guarantee. He denied that the practice tended to create a monopoly as alleged by interests opposed to the practice.

To a question by Commissioner Murdock as to the legality of the practice Mr. Nardin declared that the illegality of the price guarantee depends upon the use made of the practice. He contrasted the use of the guarantee against a price decline by a particular industry for the purpose of reducing competition, by the use of the same practice by another industry for the purpose of maintaining production and otherwise improving operations.

Abuse of the privilege of receiving a guarantee against a falling market by dealers would be avoided. Mr. Nardin said, by a close supervision of the volume of purchases and sales of dealers.

R. P. Ackerly, representing the National Wholesale Grocers' Association, asked the commission to leave the question to the independent judgment of the manufacturer. He denied the charge that the wholesale dealer has everything to gain from the price guarantee and practically nothing to lose.

Chairman Murdock, in closing the hearing, extended an invitation to all persons attending the conference to present additional information to the commission in the form of briefs. The commission may issue a general statement of its opinion or may apply the information obtained at the hearings to the cases involving the question now pending for decision.

The National Wholesale Grocers' Association has made an analysis of

the opinions of some of its members on the question of price guarantee. Those in favor of the guarantee numbered 46, while those opposing, with certain reservations, numbered five. Those against the guarantee without reservation numbered three, and those opposed, with certain reservations, numbered three.

A summary of the arguments favoring the guarantee is as follows:

"Prices on proprietary articles are as a rule made arbitrarily and bear no direct relation to market conditions. Manufacturing cost involves a knowledge of market conditions of the ingredients of the finished products, concerning which the buyer has no knowledge. The jobber is dependent on the price fixed by the manufacturer, and for this reason the price paid by the former should be guaranteed against a decline.

"The profit realized by wholesalers and jobbers on many proprietary items is so low, that the withdrawal of the guarantee would necessitate an increase in the jobbers' margins to insure protection against decline.

"There is no increase in cost to the consumer as the decline in price is due to competitive conditions and the decline in price is passed along by the jobber to the retailer, and by the latter to the consumer. In the absence of a guarantee prices would, in the event of declines, be maintained until existing stocks were disposed of; whereas, in cases where a guarantee is given, declines are passed along to the consumer.

"With the protection of a guarantee, the smaller jobbers and those in distant markets are enabled to purchase in larger quantities, yielding savings in discounts and freight rates."

A summary of arguments opposed is as follows:

"The guarantee against decline encourages monopolies.

"It enables the merchant with greater capital to purchase large stocks for the purpose of controlling the market with no risk to himself.

"It causes excessive purchases by both jobbers and retailers with the hope of gaining by an advance, the risk to be borne by the manufacturer if the advance does not materialize."

Government Prohibition of Flavoring Extracts Feared

Attack by Enforcement Officers on Tincture of Ginger Alarms Manufacturers

THROUGH the action of John F. Kramer, Federal Prohibition Commissioner, in declaring that the manufacture of tincture of ginger (U. S. P.) would have to cease in the United States, the officers and members of the Flavoring Extract Manufacturers' Association of the United States have become alarmed that if the manufacture and sale of tincture of ginger is entirely prohibited such action will simply "open the door for the absolute prohibition of the manufacture and sale of other extracts."

A bulletin issued by the officers of the association to its membership says that "it is of the utmost importance that the precedent be not established." Once the precedent has been established, it is pointed out that the next step may be to prohibit the manufacture and sale of vanilla and lemon extracts, and possibly all other extracts containing alcohol.

A committee representing the association recently appeared before the prohibition enforcement officials in Washington. At this time the announcement was made that a regulation was just then ready for issuance prohibiting the manufacture and sale, after a certain time to be named, of tincture of ginger. Prohibition Commissioner Kramer stated to the flavoring extract manufacturers that he had become convinced from evidence submitted to him that tincture of ginger was being widely used for beverage purposes, and that therefore it would have to be classed as an intoxicating liquor.

The association's bulletin on the subject points out that this condition of affairs has been brought about to a large extent by some of the members of the association who have failed to heed the warnings sent out from time to time by the association officials.

Order to Be Held in Abeyance

Although Commissioner Kramer seemed to be adamant in the stand he took, the extract manufacturers succeeded in persuading him to hold the matter in abeyance until some means could be devised of meeting the views of the Government in such a way as would not obsolutely prohibit the manufacture of tincture of ginger.

Three suggestions were made by the committee of the extract manufacturers' association, this committee consisting of Charles D. Joyce, president; R. H. Bond, chairman, legislative committee, and Thomas E. Lannen, general counsel. Mr. Joyce is with the A. Colburn Co., Philadelphia, and Mr. Bond is associated with McCormick & Co., Baltimore, Md. Two of the committee's suggestions involved the filing of reports by manufacturers, and were therefore turned down by the prohibition commissioner on the ground that manufacturers are already overburdened in making out reports, and that the departments in Washington are also overburdened with clerical work, and that the matter of trying to regulate subjects of this kind by making manufacturers and others make certain reports monthly or quarterly had reached a limit. The committee was given to understand that not much could be expected from these two suggestions, but the third suggestion, which involves a change in the formula for tincture of ginger, was promised consideration. Suggestion No. 3 was as follows:

"That a regulation be issued providing that from and after ninety days from the date of the issuance of the regulation the product now known as the U. S. P. tincture of ginger should not be permitted to be sold unless its contents of ginger extractives should be double the content of the same now prescribed by the United States Pharmacopoeia."

It is believed that this will solve the problem, as it will make tincture of ginger too strong of ginger to permit its use as a beverage, and at the same time will preserve its use as a medicinal agent without the risk of persons unknowingly taking a quantity that will be injurious. The

ginger extractive will be doubled, but the alcoholic content will remain the same.

The committee of the association has received no assurance that the latter suggestion will be approved or disapproved, but Prohibition Commissioner Kramer stated that it would be taken under consideration.

Alcohol Permits Expire Dec. 31

In this connection, the Flavoring Extract Manufacturers' Association and the National Manufacturers of Soda Water Flavors, both represented by Thomas E. Lannen of Chicago as general counsel, have notified their members that permits for the use of alcohol in manufacturing their products will expire on Dec. 31, 1920, and must be renewed.

New Secretary of Association

Gordon M. Day of the Day-Bergwall Co., Milwaukee, Wis., has consented to act as secretary of the Flavoring Extract Manufacturers' Association until the next convention, at which time the question of employing a paid secretary will probably be considered. As Mr. Day had been chairman of the membership committee, that position was filled at a recent meeting of the association's executive committee by the appointment of Robert E. Heckin of the Heckin Co., Cincinnati, Ohio.

Canadian Food Laws Amended

AMERICAN manufacturers of food products who export their products to Canada are advised by the Canadian authorities to make a careful study of the latest amendment to the Dominion food laws, which defines misbranding and provides penalties.

The amendment in full follows:

Food shall be deemed to be misbranded within the meaning of this act,—(a) if it is an imitation of, or substitute for, or resembles in a manner likely to deceive, another article of food or drug under the name of which it is sold or offered or exposed for sale and is not plainly and conspicuously labeled so as to indicate its true character; (b) if it is stated to be the product of a country of which it is not truly a product; (c) if it is sold or offered for sale by a name which belongs to another article; (d) if it is so colored or coated or powdered or polished that damage is concealed or if it is made to appear better or of greater value than it really is.

(e) If false or exaggerated claims are made for it upon the label or otherwise.

(f) If in package form, sealed by the manufacturer or producer and bearing his name and address, the contents of each package are not conspicuously and correctly stated within limits of variability to be fixed by regulations as in this act provided in terms of weight, measure or number upon the outside of the package; provided that this subsection shall not apply to packages the weight of which including the package and contents is under two ounces; provided also that nothing in this section shall be taken to require the statement of weight, measure or number upon containers or packages of standard size as provided by orders of the Governor in Council under the Meat and Canned Foods Act, and provided further that the Governor in Council make regulations deferring the operation of this subsection in whole or in part for such period as he may prescribe, up to the first day of July, 1923.

(g) If sold as a compound, mixture, imitation or substitute, it is not labeled in accordance with the requirements of this act.

(h) If the package containing it, or the label on the package, bears any statement, design or device regarding the ingredients, or the substances contained therein, which statement, design or device is false or misleading in any particular; or,

(i) If the package containing it, or the label on the package, bears the name of an individual or of a company, claiming to be the manufacturer or producer of the article, which individual or company is fictitious or non-existent.

Every article of food which is a compound, mixture, imitation or substitute shall be plainly and correctly labeled as such; and the words "pure" or "genuine" or words equivalent to these terms, shall not be used on the labels or in connection with such articles, and such articles shall be so packed, marked or labeled as not to be likely to deceive any person with respect to their true nature.

1. Every person who by himself or his agent or employe manufactures for sale, sells, offers for sale or exposes for sale any article of food or any drug which is adulterated or misbranded shall be guilty of an offense.

2. Every person who attaches to any article or package of food or drug sold or offered or exposed for sale any label or mark containing any untrue or misleading names, devices or statements, or who neglects or refuses to label or mark any article or package of food or drug in accordance with the requirements of this act, shall for a first offense be liable upon summary conviction, to a fine not exceeding $200 and costs and not less than $50 and costs, or to imprisonment for any term not exceeding three months, or to both fine and imprisonment, and for each subsequent offense to a fine not exceeding $300 and costs and not less than $50 and costs, or to imprisonment for any term not exceeding six months or to both fine and imprisonment.

Canada's Food Exports

CANADA'S export trade with the United Kingdom in food products for the fiscal year 1919-20, eliminating from the various classifications commodities which do not strictly come under the term of food, reached a total value of $359,966,-818, which was in excess of that of the fiscal year 1918-19 by $74,317,-162, or 26 per cent.

The most striking increase was under the general classification of sugar, confectionery, etc. The trade in these commodities had a value of $17,625,344, compared with less than $1,000,000 worth in the previous year. In grains, flours, and kindred products, naturally the most important branch of the trade, the exports to Great Britain had a value of $212,604,244, compared with $160,-848,29 in the fiscal year 1918-19. Meats (fresh, canned or preserved), though next in order of importance, had a value of $77,640,497, a gain of more than $4,500,000. Fruits (fresh, canned or preserved), at $5,910,843, increased by $2,343,884. In eggs exported to the mother country, the value of the trade jumped during the year from $329,253 to $3,309,364. Fish, nearly all of which was of the canned or preserved description, had a value of $9,836,-208, a gain of $1,205,200 over 1918-19.

The only general classifications under which there were declines in value were milk products and canned or preserved vegetables, the value of the former being $33,075,000, against $36,586,744 the previous year, and of the latter $1,360,427, against $1,920,920.

As the total merchandise of Canadian production exported to Great Britain during the fiscal year 1919-20 had a value of $489,151,806, it will be seen that the sum of $359,-966,818 credited above to commodities which can be designated food products, is equal to 73.59 per cent of the whole, says a correspondent of the London Times Trade Supplement. In the previous year the proportion was 52.82 per cent.

Small Importation of Tea Due to Accumulated Supply

THE reduction in the quantity of tea imported into the United States this year is not due to a falling off in the consumption of tea, as has been erroneously reported, says George F. Mitchell, supervising tea examiner of the Bureau of Chemistry, United States Department of Agriculture, but to the surplus supply brought in during the war and to the high cost in the tea-producing countries. The quantity imported during the fiscal year ending June 30, 1920, was less than the amount brought in during each of the three preceding fiscal years, but was slightly more than the normal annual importations before the war. The degree of purity of the tea imported during the last year was the highest on record.

The large importations during the war were due, according to Mr. Mitchell, to the fear on the part of the tea importers that an embargo would be placed on the importation of tea in order to conserve shipping space, or that a duty would be placed on it to raise war revenue. The likelihood of either or both of these factors entering the situation induced the importer to bring in large quantities of tea while it was possible to do so without the payment of duty. A surplus supply of tea was thus accumulated.

Cost of Tea Higher

The high cost of exchange in many of the tea-producing countries, together with increased costs for labor, and a shortage of the crop in some countries, has greatly increased the price that importers have to pay for tea. During the last year when large supplies were in the hands of dealers the importers hesitated to bring in additional tea at a higher price than would probably have to be paid later. There is no indication, however, that less tea is being consumed now than in former years. It is highly probable in fact that more tea is being consumed since the advent of prohibition than formerly.

The first column of the following table shows how the importations increased during the war, and the second and third columns indicate that the quality and purity of the tea offered for entry into the United States has been of an increasingly high degree:

Fiscal year.	Pounds imported.	Pounds rejected.	Per cent rejected.
1913	95,539,667	1,461,787	1.53
1914	92,180,460	841,595	.9
1915	95,306,854	948,475	.9
1916	109,536,526	1,768,573	1.614
1917	105,981,158	954,425	.9
1918	148,684,384	2,354,277	1.58
1919	113,338,535	1,420,568	1.25
1920	96,862,858	145,246	.15

Notwithstanding that large quantities were carried over from previous years, the importations during the year closing June 30, 1920, were slightly larger than the importations during 1913, 1914, and 1915, though less than the abnormal importations during the war. The degree of purity of the tea offered for importation is shown by the fact that in the last two years only one small shipment was rejected, because of artificial coloring and facing.

The tea inspection service was transferred from the Treasury Department to the Department of Agriculture on July 1, 1920. The Supervising Tea Examiner and all his staff were at the same time transferred. The inspection in the Department of Agriculture is therefore to be done by the same men who did it for the Treasury Department. The inspection service was transferred to the Department of Agriculture for the reason that tea is subject both to the tea inspection law and to the pure food law. Since the pure food law is enforced by the Department of Agriculture it was believed that the tea-inspection work could better be done under the supervision of that department.

Will Package Tea Sold Displace Bulk?

APROPOS of the tea advertising campaign which the big tea importers of the country are preparing to launch, probably within the next six months, students of the food markets seem to feel that a revolution is coming in the tea business within the next few years, viz., a change from bulk to package basis, says the *Modern Merchant and Grocery World.* While there is considerable package tea sold, the tea business up to now has always been a bulk business.

One hundred and seventeen million pounds of tea were sold in the United States during 1919. Seventy-five per cent of this tea reached the consumer in bulk; 25 per cent in package form under trade-marked brand names.

These figures indicate an important tendency in the tea market. During the past few years the total annual sales of tea have increased but slightly; the sales of packaged, branded tea have almost doubled.

The sale of tea in bulk—like the sale of all other food products in bulk—is decreasing steadily. The demand for branded packaged tea—like the demand for all other branded packaged food products—is increasing by leaps and bounds.

In the next few years most of the buyers of bulk tea will probably become buyers of packaged tea. Present data indicate that the sales of packaged tea this very year will increase to 35 per cent of the total tea sales.

Once the demand for packaged tea predominates, the market will likely be controlled by the nationally advertised brands.

The whole history of packaged food products shows this. That it is also true of tea has been proved already. Of all the packaged tea sold in 1919, nationally advertised brands represent 75 per cent; local brands 25 per cent.

Practically all of the students of the tea business feel that it offers the greatest field today for the spread of the package idea.

Canadian Authorities Are Studying Baking Powders

Dominion Health Officials Considering Change in Rules for Labeling

ACCORDING to A. McGill, chief analyst of the Department of Health of Canada, the investigation of baking powders on sale in the Dominion has revealed that 46 out of 353 samples examined failed to meet the requirements of the Canadian food laws and were classed as adulterated, within the meaning of that act. The standards for baking powder had been in force in Canada for fifteen months before the investigation was begun. As a result of the investigation the following recommendations have been made by the department:

1. Work be undertaken as soon as possible to determine the keeping qualities of the various types of baking powders.

2. Work be undertaken to evolve a simple and reliable method of detecting the presence of tartrates in baking powders.

3. Standards be amended to:

(a) Compel the marketing of the composition of the powder on each tin or package of baking powder;

(b) Compel the marking of the date of manufacture on each tin or package;

(c) Compel marking the net weight of the contents on each tin or package;

(d) Prohibit the printing of any advertising or descriptive matter, other than directions for use and such other information as is required by law, on the labels of tins or packages.

In his report on the inspection of baking powders Analyst A. Papineau Couture outlined the situation as follows:

"Baking powder has been examined on six previous occasions in these laboratories, but this is the first systematic inspection which has been carried out since our standard was established in 1918. This was first issued under authority of an order in council dated March 8, 1918; it defined baking powder, required that the name of the acid constituent be marked on the label, define alum, and established a minimum yield of 10 per cent of available carbon dioxide. These standards were canceled by an order in council dated August 17, 1918, which merely defined baking powder and established a minimum of 10 per cent available carbon dioxide. It is worthy of note that though not compelled to do so by law several manufacturers print the composition of their powders on the label.

"Of the samples reported eighteen yielded slightly less than 10 per cent gas and have been allowed to pass, while forty-seven of them fall considerably below the standard and have been declared adulterated.

"A very interesting point has been brought out by these cases, viz., How long after the baking powder leaves the factory should a manufacturer be held responsible for its quality? In other words, how long will the baking powder keep without undue deterioration?

"As far as can be judged from the correspondence which has come to this laboratory with the legal proceedings taken against the vendors of adulterated samples, Canadian manufacturers do not seem to wish to shirk the responsibility which should rightly fall upon them, but, on the other hand, they do not wish to stand the loss which a retailer may have brought upon himself by overstocking, and they feel they are not bound to make good to the retailer a fine which may have been imposed for the sale of baking powder which had been kept on the shop shelves for several years and had considerably deteriorated through no fault in manufacture. It seems to me that this stand is well taken, but the question remains: 'How long is the manufacturer responsible?' Experience proves, however, that a well packed baking powder may be kept for several months, or even a year, without any material change. The maximum time which a baking powder can be kept would doubtless depend on the nature of the packing, and it is quite possible that in certain cases it might be considerably over a year. It would be of utmost importance to Canadian manufacturers and also to the retailer that the date of manufacture be stated on each tin or package of baking powder."

New Regulations for Food Inspection in Canada

Rulings Applying to Imported Products Now in Effect

THE following new regulations for the inspection of fruits, vegetables and milk are now effective in Canada:

"No person shall import nor shall there be imported, any fruit or vegetables, or fruit or vegetable products, canned, bottled, dried, evaporated or otherwise preserved for food, or any milk, condensed, evaporated, dried or otherwise preserved for food, unless the requirements of this section are strictly adhered to,

"Collectors of customs shall not clear any importation of fruit or vegetables, or fruit or vegetable products, canned, bottled, dried evaporated or otherwise preserved for food, or any milk, condensed, evaporated, dried or otherwise preserved for food, unless such shipment is accompanied by an affidavit in duplicate taken before a justice of the peace, or other person duly authorized (in the country of origin), to attest such declaration.

"The form of declaration, which

Should Buyers Read Labels On Food Products?

A decision of unusual interest to food purveyors was recently rendered by Judge Borquin of the United States District Court of Montana in the case of Royal Baking Powder Co., vs. Donohue, et al. The court after stating that the law (Food Law of Montana) prohibited and penalized misbranding, further said:

> "It lays no command on the purchaser to scrupulously or at all read labels."

One might infer from this language that manufacturers and sellers of food products act at their peril so far as possible deception on the part of the buyer is concerned, even with a truthful label.

It would seem more logicol to say that a manufacturer should be protected from charges of misbranding if his label truthfully describes the product, whether the buyer reads the label or not. Everyone knows that changes are occurring in the manufacture of food products the same as in any other article of commerce.

Various mixtures and compounds are found on the market today which furnish low-priced substitutes for some heretofore higher-priced standard article.

If a wholesome substitute can be marketed at a lower cost, it should not be prohibited by an unduly rigid construction of the law. True, the public shall be fully informed, and that is the province of the label. It is exceedingly illogical to say there is likely to be deception because many buyers do not read the labels, and the law does not require them to do so.

The purpose of the law, undoubtedly is to prevent the use of labels that are deceptive in design but accurate in fact. Armour and Company manufacture a number of so-called substitutes and endeavor to have their labels so fashioned and so worded that there can be no doubt of the fact that they are covering containers that hold substitutes. Armour and Company feel that the public has rights and their labels are all designed to help the public protect itself.

ARMOUR AND COMPANY
CHICAGO

5655

must be addressed to the collector of customs, must state that the shipment described is manufactured from sound raw materials, and that its manufacture was carried on under the sanitary conditions provided for in the regulations, that the products are at the time of shipment, sound, wholesome, and fit for human food, that the containers and packages show thereon the true name and address of the manufacturer, or of the first dealer, and that the description of the contents is correct. Place and date must be shown and also the name and address of the actual manufacturer, name and address of shipper, name and address of consignee, number of packages, number of containers in each package, name of product, identification marks, signature of shipper, the signature of the person before whom the declaration is sworn.

"All fruit or vegetables, or fruit or vegetable products canned, bottled, dried, evaporated or otherwise preserved for food, or any milk, condensed, evaporated, dried or otherwise preserved for food, shall be subject to such inspection in the Dominion of Canada as may be deemed necessary or advisable, and any fruit or vegetables or fruit or vegetable products, canned, bottled, dried, evaporated or otherwise preserved for food, or any milk, condensed, evaporated, dried or otherwise preserved for food, that does not conform to the requirements of these regulations and the appendices thereto shall, upon condemnation by an inspector, be forfeited. Such samples of imports as may be deemed necessary by the inspector to be used for testing for grading for quality, quantity or purity shall be furnished by the importer free of any charge, but the veterinary, director general shall furnish such importer with a report of the examination of said sample or samples within a reasonable time."

Personals

Raymond P. White of the Hills Brothers Co., New York, manufacturers of cocoanut products, has returned from a two months' business trip to Smyrna, Greece and Italy. While in Smyrna he made a close study of the fig industry.

Holgate Thomas, general sales and advertising manager of the California Associated Raisin Co. for the past six years, has resigned, and after Dec. 31, next, will engage in the food brokerage business in San Francisco, handling California food products.

Samuel Sinclair, for many years a general food broker in Cleveland and Canton, Ohio, recently became affiliated with the McClure Co., food broker, Cleveland.

U. H. Dudley & Co., food brokers, New York, will give up their present quarters at Hudson and Duane streets, which they have occupied for a great many years, and occupy a building to be erected for them at Varick and Watts streets, New York.

Chance for American Breakfast Foods in South Africa

AMERICAN breakfast foods have not succeeded as yet in gaining such a strong hold on the South African market as they have in other parts of the world, says a report to the Bureau of Foreign and Domestic Commerce. This may be attributed in part, it is stated, to the failure of American manufacturers to obtain responsible personal repre-

sentation, and to the placing of agencies with established concerns which are more interested in selling the article itself than in the development of trade on behalf of the manufacturer in question. Again, the failure to advertise freely in that market has prevented the growth of trade.

It is the custom of South Africans, the report states, to partake of a heavy breakfast, and only a small percentage of the population confines itself to coffee and rolls for the morning meal. The menu for this meal usually consists of some form of breakfast food, and also of eggs and some kind of meat, which are often followed by marmalade or jam.

The report gives the following advice to American manufacturers:

"In order to overcome the preference for an article which is well known and with which a manufacturer entering this field will have to compete, it is essential that good representation be obtained. The manufacturer must also be prepared to assist his agent by placing at his disposal the experience which has been gained in the United States and in foreign countries in the sale of breakfast foods. The sale of a new brand will also require advertising and the distribution of samples."

A list of wholesale and retail grocers in Johannesburg, Pretoria, Bloemfontein, Salisbury, and Bulawayo, and a list of commission agents and importers in Johannesburg can be obtained from the Bureau of Foreign and Domestic Commerce or its district offices.

Canada's Baking Powder and Flavoring Industry

A preliminary report on Canada's baking powder and flavoring extract industry for the calendar year 1918 has been completed by the Dominion Bureau of Statistics, covering the operations of 24 establishments, of which 11 were in the Province of Quebec, 10 in Ontario, 2 in Nova Scotia, and 1 in Manitoba.

The total capital invested in the industry for the whole of Canada was $2,259,753, of which the principal items were: Land, buildings, and fixtures, $561,493; machinery and tools, $209,374; materials on hand, stocks in process, finished products, fuel, and miscellaneous supplies, $816,341; and cash, trading and operating accounts, and bills receivable, $672,545. Distributed by provinces, Ontario shows a total investment of $1,725,424; Quebec, $347,170; and Nova Scotia and Manitoba combined, $187,159.

Materials Used

The quantity and cost value delivered at the works of all materials used during the year are itemized in the accompanying table:

Class of Materials	Quantity	Cost value at factory
Coffee beans, green ..... pounds...	926,712	$185,693
Spice materials ..... pounds...	103,734	27,713
Baking-powder materials:		
Soda bicarbonate ..... pounds...	1,105,461	23,131
Sulphate of ammonia ... pounds...	28,590	1,304
Cream of tartar crystals ..... pounds...	8,768	6,710
Other materials not specified		232,272
Cocoa beans ..... pounds...	8,000	1,760
Essential oils ..... pounds...	21,667	76,547
Alcohol ..... gallons...	21,179	92,602
Sugar ..... pounds...	1,406,767	124,477
Starch and glucose ..... pounds...	364,290	22,973
Flour ..... barrels...	712	7,927
Phosphates ..... pounds...	70,568	12,037
Oranges		17,965
Fruits ..... quarts....	154,563	49,030
All other materials		938,660
Total cost		$1,800,801

Selling Value of Output

The quantity and selling value at the factory of the various products made during the year are itemized in the table below:

Class of Products	Quantity	Selling value at factory
Baking powder ..... pounds...	4,235,001	$942,874
Coffee ..... pounds...	932,457	199,852
Spices ..... pounds...	95,927	41,240
Cocoa and chocolate ..... pounds...	8,000	2,160
Flavoring extracts and essences ..... dozen....	204,692	310,242
Jelly powders ..... cases.....	17,965	82,256
Yeast cakes ..... cases.....	332,333	430,270
Lye ..... cases.....	27,915	180,513
Pickles ..... gallons...	33,548	71,022
Fruit oils ..... gallons...	8,955	33,731
Caustic soda ..... pounds...	488,025	38,007
All other products		821,539
T tal		$3,153,706

The 24 establishments covered by this review employed 289 male and 300 female workers, to whom they paid $508,672 in salaries and wages during the year.

Milk Powders Taking the Place of Fresh Milk

IN A discussion of milk prices and milk powders, in a recent issue of the monthly bulletin of the Boston Health Department, Health Commissioner William C. Woodward of that city calls attention to the advantages in the use of powdered milk products, drawing the conclusion that the growing use of milk powders by the consuming public furnishes a solution for the high price of fresh milk and at the same time helps to solve the milk producer's problem of steady, year-around sale of his product.

"One of the manifest causes of fluctuations in the price of milk, as distinguished from less bulky and less perishable foodstuffs," writes Dr. Woodward, "is the relatively limited area from which it is economically possible for any large community to draw its milk supply. Fluctuations in the volume of milk produced within that area, fluctuations sometimes beyond the control of the producer, cannot be economically adjusted by drawing on remote milk supplies in case of shortage and by shipping to distant markets in case of surplus. Neither is it economically possible to hold as milk the surplus from seasons when the market is glutted, so as to make it available during the seasons of milk shortage; in time of glut, the excess is worked up into butter and cheese and disappears permanently from the milk market. In short, there is now no reservoir into which the milk surplus, either as relates to time or place, can go, to be drawn on in event of shortage, so as to stabilize the milk market of the country. This situation is, however, apt to be materially changed in the near future by improvements that have been made during recent years in methods for the preparation of dried milk for the market in the form of milk powders. Experiments in the use of such milks have shown that for purposes of infant feeding they have all of the nourishing and growth promoting properties of fresh milk, that they are as digestible, and that it is impossible to detect a milk remade from properly mixed milk powder and water from ordinary fresh milk.

"The possibility of drying milk on a commercial scale so as to retain all of its nourishing and growth-producing properties, of preserving the milk thus dried over long periods of time, and of economically shipping it for long distances, all tend to create a new element in the milk market that sooner or later is bound to have a marked effect upon the milk industry and upon milk prices. For if surplus milk is always assured a ready market for manufacture into milk powder, the farmer need have no fear of loss, through over-production; and if milk powders be available at all times for the preparation of an entirely satisfactory substitute for liquid milk more or less recently from the cow, when there is a shortage of that article, the consumer need have no fear of a milk shortage or even of a "milk strike." Then, too, the fact that a surplus of milk in any part of the world can find a market in some place, more or less

(Continued on page 33)

UNIFORMITY

of

SANITARY AND PURE FOOD LAWS ESSENTIAL TO THE FUTURE DEVELOPMENT OF FOOD INDUSTRIES

We earnestly desire to co-operate with and support the Food and Drug Officials in their efforts to equitably and impartially enforce the Pure Food Laws of the various states; and in their efforts to bring about uniformity between such laws and the National Pure Food Law, which would be immensely beneficial to all Food Industries throughout the United States.

We respectfully suggest that in the enforcement of such laws that sanitary conditions be given special attention in preference to minor technical violations and that as soon as possible a uniform sanitary law be adopted by all of the states.

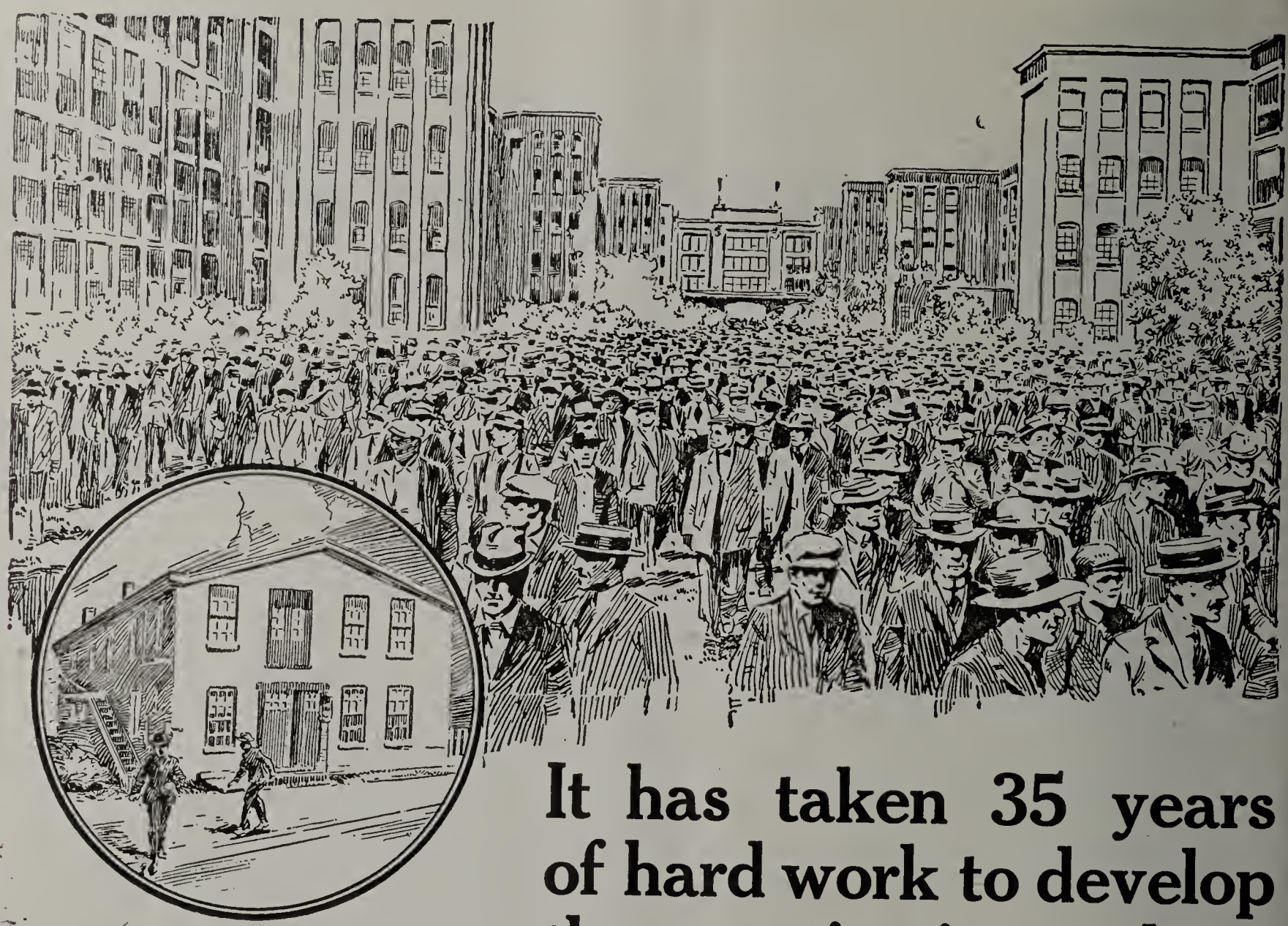
NATIONAL CONFECTIONERS' ASSOCIATION

of the

UNITED STATES

111 West Washington Street

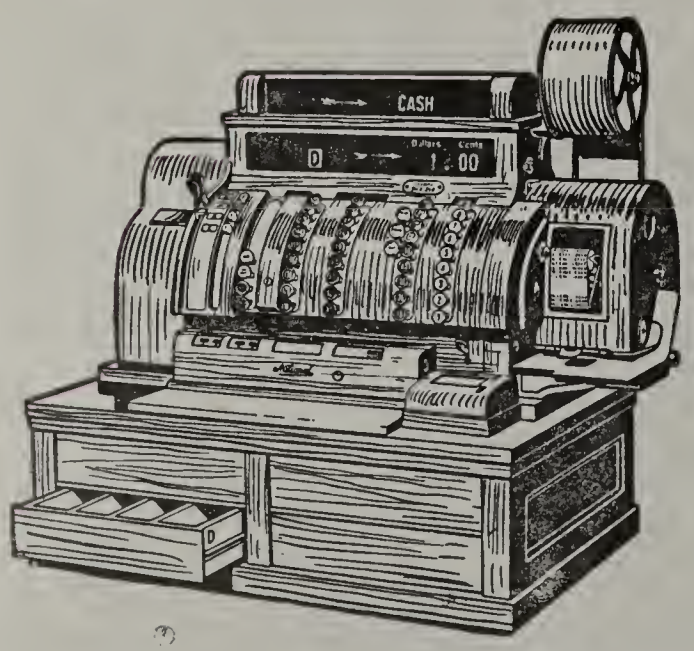
Chicago



It has taken 35 years of hard work to develop the organization making National Cash Registers

STARTING with two employees in one little room, The National Cash Register Company now has a making organization of over 7,000 people working in 21 big buildings.

It has taken 35 years to develop this tremendous organization.



Many obstacles had to be overcome in those years. Money, time, and energy were thrown into the enterprise by large-visioned men who believed that cash registers were a necessity in stores of all kinds.

Slowly, but surely the business grew. Building after building sprang up to house the expanding organization.

The National Cash Register factory of today is the result. It is built on a foundation of faith in the cash register as a business necessity. It is dedicated to the making of a labor-saving machine that helps merchants, clerks, and customers.

The National Cash Register Company
Dayton, Ohio
Offices in all the principal cities of the world

How Canned Food will help a Woman with Her Greatest Problem

Three meals a day
—a thousand a year.

DO you feel like "just giving up" sometimes when trying to tempt the appetites of that family of yours?

Haven't you stood in the middle of your kitchen or pantry many a time, wondering what you would "get" for the next meal?

But suppose that the next time you look around your pantry for inspiration, you discover a variety of canned foods on the shelves—*real* foods that give you surprising suggestions for tempting meals!

Canned Food Variety Solves your Meal Problems

The variety of canned foods is wonderful, and the number of things that can be made with such foods is still more wonderful. You need not worry about variety to your meals if you are using canned foods as freely as you *can* use them.

You need not worry that meals won't look tempting, taste delicious and satisfy fickle appetites.

Greatest Allies a Woman can Have

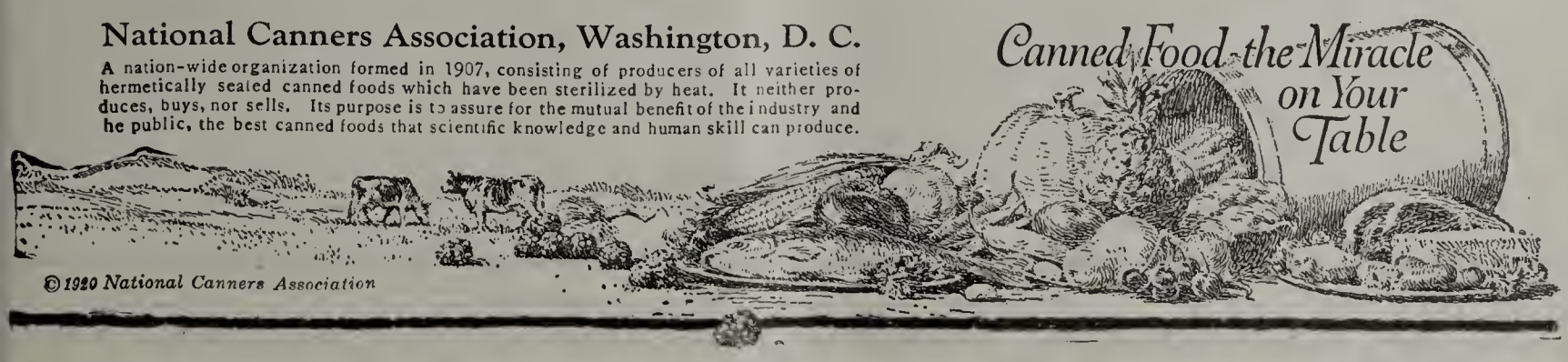
With plenty of canned foods on hand in full variety of fruit, vegetable, fish and meats, to say nothing of soups and milk, a woman is more resourceful than her family would have believed possible.

Many a Surprise in store for your Family

It is almost like travelling all over the country and eating the choice foods of each State of the Union when you use canned foods in all the variety of kinds and "dishes."

National Canners Association, Washington, D. C.

A nation-wide organization formed in 1907, consisting of producers of all varieties of hermetically sealed canned foods which have been sterilized by heat. It neither produces, buys, nor sells. Its purpose is to assure for the mutual benefit of the industry and the public, the best canned foods that scientific knowledge and human skill can produce.



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WILSON'S
Certified Square-Pressed Boiled Ham
for making real sandwiches

SOMETIMES we are astonished at the hearty appetites of growing boys and girls—but big appetites are Nature's way of helping children to get what they need to grow into strong, healthy men and women.

Let your boys and girls feast on generous sandwiches made with Wilson's square-pressed boiled ham; give them all the nourishing, muscle-making qualities of this delicious food.

WILSON'S square-pressed boiled ham is carefully selected, trimmed and boned so that there is no waste when sliced. Its tempting flavor is emphasized through careful cooking by expert chefs. The illustration shows how it is specially "square-pressed" so that each slice makes four neat sandwiches. Buy it, sliced fresh to order, of your meat dealer, delicatessen store or grocer. The Wilson label guarantees its fine quality.

"This mark WILSON & CO. your guarantee"

The Wilson label protects your table

MORRIS

Supreme Marigold

For baking you'll prefer this wholesome Marigold Oleomargarine. It's made from only the purest ingredients combined with pasteurized milk. Request the kind with the yellow and black label.

MORRIS & COMPANY

Beech-Nut Ginger Ale

Great!

© 1919
B-N. P. Co.

YOUR patrons who appreciate fine flavor will be delighted to know you serve Beech-Nut Ginger Ale. Have the **full name** BEECH-NUT printed on your menus.

BEECH-NUT PACKING COMPANY, Canajoharie, New York

WHY not earn a little extra money during your spare time? We will pay you handsomely for getting subscriptions to

The American Restaurant

WRITE FOR PARTICULARS

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

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SERVE the genuine—take advantage of the crowds that call for it—and the trade that makes the turnover.

THE COCA-COLA COMPANY ATLANTA, GA.

1A

Milk Powders Taking Place of Fresh Milk

(Continued from page 26)

remote—perhaps thousands of miles away—and the fact that a milk shortage or a "milk strike" in any part of the world can be met by milk powders and re-made milk from distant sources of supply, will tend to put the entire matter of milk production and sale on a more stable basis than at present."

Exchange Situation Leads to Record Butter Imports

THE record for butter imports established in 1919, when 9,519,368 pounds of butter and butter substitutes were brought into the United States, was short lived. Following the recent announcement of these import figures by the United States Department of Agriculture the department has compiled reports for the first seven months of this year which show that the United States during that period imported 22,855,090 pounds of foreign butter, which is more than ever before.

This remarkable increase is attributed by foreign marketing experts of the departments' Bureau of Markets largely to the foreign exchange situation. With American dollars commanding a premium throughout the world it is obviously good business for foreign butter manufacturers to sell their product in the United States. Foreign manufacturers also have the advantage of low cargo rates. Another reason for the increased imports is that whereas England was formerly Denmark's principal butter outlet, England can now purchase butter more cheaply from Australia and Argentina. Ireland also is producing butter on a larger scale.

The effect of the exchange situation is also reflected in a decrease of American butter exports. Thus, 15,529,271 pounds of American butter were exported during the first seven months of 1920, whereas 22,986,294 pounds were sent out of the country during the corresponding period of 1919.

Imports of butter from Denmark are being curtailed at present because the prices asked by the holders of Danish butter in storage here are higher than the wholesale prices for the American product, and some difficulty is being experienced in moving the Danish stocks.

Editors See New Plant Products

An interesting exhibit of fruits and vegetables was prepared by the Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture for the benefit of the agricultural editors who met in Washington this summer.

Ranged upon the tables were specimens of cassava root, dasheen tubers, udo shoots, passion fruit, white sapote fruit, chayotes, and last, and best of all, a collection of highly colored and extremely fragrant mango fruits.

All the vegetables and fruits were fresh and all were grown in the United States at Government stations.

The culture of some of the vegetables and fruits represented at the exhibition is limited by climatic conditions to our Southern States, but this feature will not bar them from the northern and western markets. The exhibition in this respect gave some idea of the increased range given to the American bill of fare by the introduction of these plants for commercial purposes.

The udo, a celery-like shoot of a Japanese vegetable, is not limited by climate and is now being grown successfully as far north as Nova Scotia. It is a salad vegetable of particularly pleasing taste and texture—something quite strange to the American palate.

The value of the exhibit is in the fact that each of its members has passed beyond the experimental stage of culture and may be regarded as an accepted agricultural resource.

WANTED—Back copies of the American Food Journal. Will pay 35 cents each for copies of April, October and December, 1918; May, July and September, 1919; January, March, May and August, 1920. Address American Food Journal, 659 First National Bank Bldg., Chicago.

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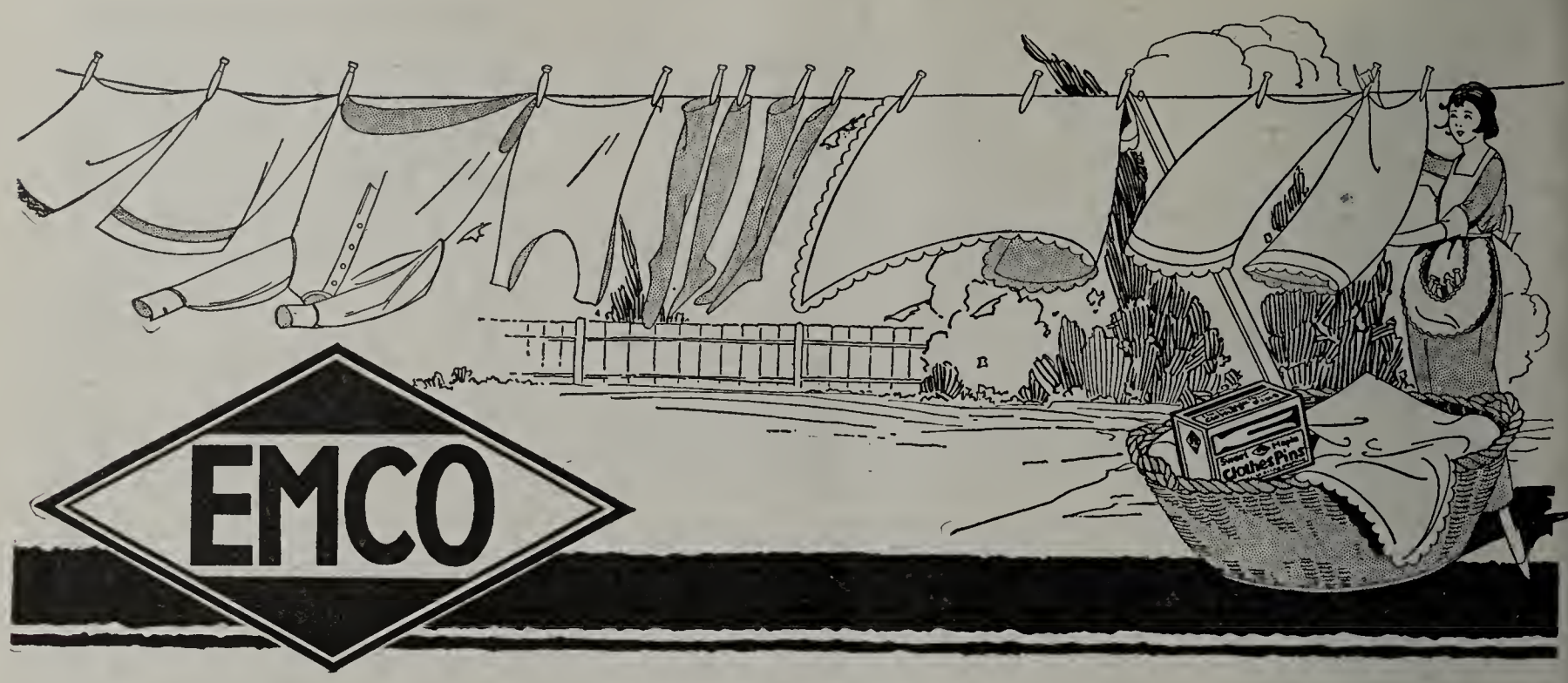


The only five dozen carton of clothespins in the market contains EMCO clothespins

Why make two or three transactions of something that your customer wants all at once?

Why pour a handful of dirty clothespins into a bag when she wants a neat, tidy package of perfect

EMCO CLOTHESPINS

EMCO pins are smooth, strong and light—made in accordance with modern domestic science requirements.

EMCO pins come in cartons containing two dozen and five dozen.

EMCO clothespin cartons are wrapped and sealed. They make "pretty stock" and are silent salesmen on any store shelf.

Do a modern, up-to-date business in this grand old staple, made and packed by the modern EMCO factory.

EMCO clothespins shipped as follows, in light, strong fibre board cases:

25/60 25 cartons of five dozen pins each
60/24 60 cartons of two dozen pins each
30/24 30 cartons of two dozen pins each

Ask your jobber for EMCO carton pins

Escanaba Manufacturing Co.

M a n u f a c t u r e r s

Escanaba, Michigan

Makers of *EMCO Standard Wire End Dishes—*
EMCO Toothpicks—EMCO Maple Picnic Plates

How Whole Wheat Biscuits Displaced An Entire Line of Crackers

(*Continued from page 16*)

CAPTURED NEW YORK MARKET

As a consequence, F. A. Hartwell, advertising manager of the company, does not hold the view, sometimes expressed, that New York is the hardest of all places to break into with a new product. But he adds the precaution that it is the worst place in the country in which to make a mistake, because nowhere else will a mistake be so costly and so difficult to retrieve.

The sampling done for the biscuit is done exclusively through the grocer and in the grocer's store. Attractive counter tins are supplied with Wheatsworth packed singly in transparent envelops to which the grocer's customers may help themselves. In the larger stores, and in branches of the chain stores, which now carry Wheatsworth, the demand was established by placing an agent in the store for a while to invite customers to taste Wheatsworth—and of course the agent had a good selling story to tell.

From the manufacturer's and advertiser's points of view, however, Wheatsworth forms a striking example of what can be done by finding the right member of a large family of products and putting the big push behind that member. Alone, it has made a fine business, to whose growth there is hardly any limit—a hundred varieties of crackers no different from other crackers led to only a struggle for existence.

Coffee Imports Increaes

The United States imported more coffee in the last fiscal year than in any previous year. There came in from foreign countries and non-contiguous customs districts 1,417,062,913 pounds, valued at $311,477,153, against the former high record in 1917 of 1,322,058,526 pounds, invoiced at $333,513,226, and 1,051,839,910 pounds, worth $144,069,369 in 1919.

This is an increase in 1920 over 1919 of 35 per cent in quantity and 116 per cent in value. Exports and re-exports to foreign countries and sales to non-contiguous territory of the United States decreased 36 per cent in quantity, from 92,662,549 pounds in 1919 to 58,585,452 pounds in 1920, and the corresponding values declined 13 per cent, from $16,442,019 to $14,283,921.

Grains so Flimsy

that they seem unreal

Now there are three Puffed Grains, remember, and all ever at your call.

All are bubble grains, airy, flaky, toasted. All are so flavory that they seem like food confections.

But two are whole grains—Puffed Wheat and Puffed Rice. And Corn Puffs are corn hearts puffed.

They make premier foods, so tempting that children revel in them, morning, noon and night.

The perfect cereals, experts say

These are Prof. Anderson's creations—the best cereal foods in existence. A hundred million steam explosions occur in every kernel. Every food cell is blasted for easy, complete digestion.

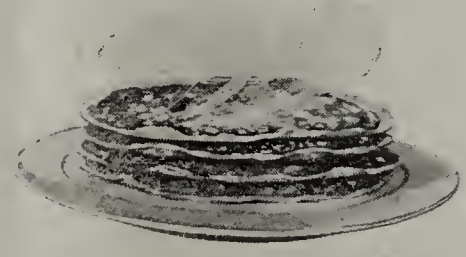
Puffed Wheat in milk, therefore, forms the utmost in a food—yet in the form of tidbits. And Rice and Corn are thus supplied in their most hygienic form. Millions of dishes are served daily. The three Puffed Grains with their many ways of serving supply folks an endless variety. But think how much oftener they could supplant foods not so delightful, not so hygienic.

Serve all three kinds and all of them in plenty.

Puffed Wheat	Puffed Rice	Corn Puffs

All steam exploded—8 times normal size

For nutty, fluffy pancakes



Now we make a pancake flour mixed with ground Puffed Rice. It makes nut-like, fluffy pancakes—the finest ever tasted. The flour is self-raising, so the batter is made in a moment. Try this new dainty. Ask for Puffed Rice Pancake Flour.

The Quaker Oats Company

Sole Makers

A most welcome suggestion-

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Everybody likes peaches. You can serve them any time of the year for Blue Ribbon dried peaches only differ from the fresh fruit in that the water has been removed by the drying process and this can be replaced by simply soaking over night.

Mention Blue Ribbon Peaches on your menu for they are favorably known everywhere through our great nation-wide advertising campaign.

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PEACH PIE	PEACH PARFAIT
PEACH FRITTERS	PEACH DUMPLINGS

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The American Food Journal

The National Magazine of the Food Trades

DRYING COCOANUTS IN THE PHILIPPINES

Special Articles In This Issue.

Views of Food Control Officials and Others on Uniform Food Laws—Report of the Convention of American Specialty Manufacturers Association—Development of the Peanut Butter Industry—What the Various Tea Grades Mean—Profiteering in British Oils and Margarin Trade—Heat Penetration in Processing Canned Goods—The Food Value of Apple Butter Substitutes—Soda Water Flavor Manufacturers Favor Calder Bill.

NOVEMBER, 1920

Do You Know That
Fleischmann's Yeast Will

keep your complexion clear—Will build health and vigor?

2 or 3 cakes a day spread on bread or crackers, dissolved in fruit juices, or just plain.

"Fleischmann's Yeast"

FAC-SIMILE OF

THE WAY TO TAKE YEAST

Yeast has an appetising, creamy taste. You eat from one-half to a whole cake 3 times a day before meals; or take it crumbled in water, fruit juices or milk.

Yeast is not a drug or medicine. It is a food and a tonic, and as such should be taken persistently for best results.

Quantity Price Offer

OCTAGON WHITE FLOATING SOAP—in boxes of 50 or 100 cakes—can be included with Octagon Soap, Octagon Soap Powder and Octagon Scouring Cleanser to get quantity price.

Profit for you—Premiums for your customers

COLGATE & CO. Jersey City, N. J.

A Combination Soap

ANOTHER Octagon Product. Essentially a bath and toilet soap which at the same time meets all the requirements of a soap for dainty laundering.

Octagon White Floating Soap

is fast gaining the recognition it deserves. Sales increasing everywhere. Get behind it—push it—display it wherever possible. Quick turn-over and good profit. Order now—OCTAGON WHITE FLOATING SOAP will sell. The name "COLGATE'S OCTAGON" is recommendation enough—the quality assures satisfaction—effective advertising in many cities will keep it to the front.

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And has Stood for

Purity, Highest Quality and Uniformity

For Over Half a Century

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Atlas Imitation Fruit Flavors
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Five dishes daily cost $18.25 a year, while just five eggs a day would cost you $82.

Quaker Oats supplies 1,810 calories of nutriment per pound. That's the energy measure of food value. Round steak yields less than half that.

A boy needs 2,000 calories per day. They would cost 13c in Quaker Oats, in eggs about $1.30.

These costs mean little in a day. But note what they mean on a year of breakfasts for a family of five.

Cost per year for serving five, based on this year's average prices

1 chop each, per day, $219	Average meats, $146
2 eggs each, per day, $164	Average fish, $146

$125 Saved

Quaker Oats breakfasts, compared with these other desirable breakfasts, save at least $125 per year.

The Quaker Oats forms the supreme food, almost the ideal food, the greatest food that grows.

It is rich in elements growing children need. As vim-food it has age-old fame. The best food you can serve in mornings is a dish of Quaker Oats.

Serve other foods at other meals. People need variety. But use this one-cent breakfast dish to cut the average cost.

Quaker Oats

Extra-flavory flakes

This brand is flaked from queen grains only—just the rich, plump, flavory oats. We get but ten pounds from a bushel. The delightful flavor has won millions the world over. It is due to yourself that you get it, for it costs no extra price.

Packed in sealed round packages with removable cover.

The American Food Journal

The National Magazine of the Food Trades

Vol. XV NOVEMBER, 1920 No. 11

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Get motion pictures, slides, charts, lectures, leaflets, and specific answers free from our Domestic Science Department.

Facts that will interest your students

How to buy good meat economically.
What constitutes a "balanced" meal.
How to make the table most attractive.
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"Abby McCardall, Thurmont High "School, Thurmont. Md."

"The Wilson Meat Charts have certainly been a joy to our cookery classes. They are the best charts of the kind obtainable.

"Mildred L. Swift, The Schools of "Oshkosh, Oshkosh, Wis."

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Write to Miss Eleanor Lee Wright, director of our department of domestic science. She can furnish you recent information on vitamine-content of various foods, calories and specific nutritive values. You can get her latest facts on cooking by temperature, and other questions encountered in your daily work.

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Thanks to scientific minds a process has been developed for enriching skimmed milk by emulsifying with it highly refined cocoanut fat. Thus the new food product HEBE is created to serve as an economical auxiliary to the family milk supply for cooking and baking purposes, thereby reclaiming skimmed milk for human use—establishing a market for this great by-product of our dairies—and adding materially to the food supply of the nation.

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THE HEBE COMPANY

Chicago Seattle

The American Food Journal

The National Magazine of the Food Trades

Vo'. XV CHICAGO, NOVEMBER, 1920 No. 11

Uniformity in Food Control Laws

A Symposium of Views by Manufacturers Food Control Officials and Others

The Editor of THE AMERICAN FOOD JOURNAL has requested comments from a number of those interested in the proposal made at the recent convention in St. Louis of food control officials by the retiring president, Guy G. Frary, food commissioner in South Dakota, to hold a series of conferences between manufacturers, wholesalers and food officials with a view toward bringing about national uniformity in food laws. Some of these letters are published herewith, and others will appear in the next issue.

Attitude of the American Specialty Manufacturers Association

By Fred Mason

President of the Shredded Wheat Company and President of the American Specialty Manufacturers Association

THE American Specialty Manufacturers' Association, including in its membership many of the leading American manufacturers of packaged food products, is now and always has been an ardent and active proponent of absolute uniformity in food regulation, in so far as such regulation affects interstate commerce. We firmly believe that effective, equitable and uniform food laws, Federal and State, are essential in the public interest, are equally beneficial to the consuming public and to the food producing and distributing trade.

All officials, consumers and traders, unite, must unite, in endorsing the beneficence of uniformity in food control, in principle, in so far as it relates to interstate commerce. Difference of opinion only arises with respect to the accomplishment of such uniformity, in fact.

In our judgment, the basic principles upon which uniformity of food regulation must be predicated, whereby such uniformity is accomplished, in fact, are these:

(1) There must be an effective Federal Food and Drugs Act, regulating interstate commerce. (This we now have.)

(2) There must be similarly effective food and drug acts enacted in each and every state, wherein the definitions of the terms "food," "drugs," "adulteration" and "misbranding," set forth in the Federal Act, are exactly duplicated, in terms and effect. (This has been largely accomplished.)

(3) There must be a provision in each such State act requiring that the regulations issued thereunder for its enforcement shall be uniform in all respects, in so far as practicable, with the regulations issued under the Federal Food and Drugs Act. (Many State acts now contain such a provision. Lack of uniformity today arises more from diversity in the enforcement of the general terms of similar acts than from diversity in the terms, per se, of such acts.)

(4) Finally, there should be a supplemental Federal Act providing that foods and drugs entered into interstate commerce and complying fully with the terms of the Federal Food and Drugs Act shall be free from all interference within a State by or under any State statute which either conflicts with or exceeds the requirements of the Federal act, *so long as such foods and drugs remain in the course of interstate commerce.* (Such a law would exhaust the exclusive regulatory power of Congress over interstate commerce, without interfering in any way with the exclusive sovereign power of the State over intrastate commerce. Assuming that the foregoing principles, 1 to 3, should be fully realized in fact, which can hardly be expected, the

enactment of this supplemental Federal act would still be necessary, in view of the special State acts. And it would always exert a strong influence toward the realization of said principles.)

(5) All necessary amendments to the definite body of such uniform statutes, Federal and State, should originate in the Federal act, and thereafter be immediately reproduced in the similar State acts.

The time is fit for general and sympathetic cooperation between all interested to effect uniformity of food regulation in the United States.

Says National Laws Must First Be Amended

By JAMES FOUST

Director, Bureau of Foods, Pennsylvania Department of Agriculture

WITH reference to President Frary's suggestion at the recent convention of the Association of American Dairy, Food and Drug Officials at St. Louis favoring uniformity in food laws, permit me to say that I am in favor of uniformity, but uniformity is out of the question until the National Food and Drugs Act is amended and made effective. The place to commence uniformity is in Washington, by changing the National Food and Drugs Act of June 30, 1906, so that it will prevent the sale of adulterated and misbranded foods.

As to the Calder Bill—I read with much interest the proceedings of the hearing before the Committee on Agriculture and Forestry in connection with said bill (S. No. 3011), and as a state food control official I consider the Calder Bill the most dangerous measure dealing with the subject of food ever presented to a legislative body, and I have been connected with food control work for twenty years. *It interferes with state rights in protecting the health of the people under the police power vested in the state,* and leaves all the states to the mercy of the National Food and Drugs Act, so far as it relates to products shipped in interstate commerce. The National Food and Drugs Act is defective and is as full of holes as a fish net.

The Calder Bill would also render null and void all city ordinances and regulations so far as they relate to products shipped in interstate commerce, as well as all state food laws.

If a committee of state food control officials were to prepare a bill amending the National Food and Drugs Act of June 30, 1906, making it a real law and making it an offense to manufacture and ship in interstate commerce food products containing any substance deleterious to health, and require labeling that would prevent fraud and deception, you would find the same representatives appearing before the committee opposing the passage of the bill.

It would be far better to repeal the National Food and Drugs Act than to pass the Calder Bill.

Under the National Food and Drugs Act, bleached flour is shipped in interstate commerce; under the Pennsylvania law bleached flour cannot be sold, as it contains nitrous acid and is injurious to health. Under the National law, sausage containing vegetable flour and water is shipped in interstate commerce; under the Pennsylvania law, its sale is prohibited. Sixty per cent of sausage meat with 5 per cent of potato flour added holds, like a sponge, 35 per cent of water. What a fraud to be allowed under the guise of a food law!

Under the National law, so-called egg substitutes or egg savers, usually consisting of corn starch, coal tar dye and a little casein, are shipped in interstate commerce and sold in cartons. Under the Pennsylvania law, their sale is prohibited. There are many other products that I could mention, but these are sufficient to convey my thought—that the States should protect the health of their citizenship.

I was delighted to read the statement before the committee of Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, who is a very high-class, competent man. He was very guarded in what he said, but he did speak in behalf of over one hundred million people of this country who must eat to live.

The purpose of food laws is to protect the health of the people, not manufacturers. The legitimate trade such as the National Canners' Association, the American Specialty Manufacturers' Association, and other honest manufacturers, making and selling pure food containing honest labels, are not asking that the Calder Bill be enacted into law, and neither is the consuming public.

Predicts Difficulty in Bringing About Food Law Uniformity

By EUGENE R. KELLEY, M. D.

Commissioner of Public Health, Boston

IT SEEMS to me that there always will be difficulty in establishing uniformity between the food laws of the different States and of the United States, on account of the different local conditions. I believe, however, that the general food laws should be uniform as far as possible, and this seems to be the intention of the various States. Each State then could pass special food laws covering such minor subjects as are pertinent to that particular State. It seems to me that this is the closest we can get toward uniformity.

Relative to the Calder Bill this department memorialized the Massachusetts Congressional delegation, requesting that the Calder Bill be opposed, because it would interfere to a great extent with the police powers of this State dealing with articles shipped in from other States, and over which articles in many instances the Federal authorities exercise little or no control, due possibly to the great expense of the work and possibly to the fact that the local authorities are able to control the situation.

The interstate shipment of milk is of prime importance to the citizens of this State, and the sale of such products, in my opinion, should be controlled by the State and municipal authorities and should not be left to the Department of Agriculture. In many instances milk dealers actually reside in other states, and yet are delivering in this State milk produced upon their own premises in other States. Should the Calder Bill become a law, the officials of this State would of course have no control over the milk so sold

Virginia Heartily Favors Uniform Food Laws

By F. C. BREAZEAL, Deputy Food Commissioner of Virginia

WE cordially welcome the plan or conferences among the State and Federal food officials and the leading organizations in the trade, including, of course, the National Canners' Association, the American Specialty Manufacturers' Association and other similar bodies.

Since the enactment of the United States Food and Drugs Act; June 30, 1906, which law this Association vigorously urged in Congress, we have devoted a great amount of time and energy to the advocacy of thoroughgoing, effective food laws throughout the United States, modcled in each case after the national statute. We should not favor any law that departed from the Federal act that has served us so well for fourteen years.

We approve also the policy of the Federal government in interpreting and enforcing that statute by regulations. We think it is much better for the trade and the consuming public that the details of administration should be covered by regulations, rather than by any attempt in a fixed statute to cover specifically every question of adulteration or misbranding that might arise. It is not humanly possible for the framers of a law to foresee the possible application of a proposed statute, going extensively into detail, but it is possible, by strict and thorough general prohibitions and by granting the power of regulation, to provide for the effective stamping out of all kinds of adulteration or misbranding as they may appear from time to time in any State. There are many States whose laws are not yet complete and are different from the Federal. We think the proposed conferences would do much toward correcting this situation.

Wholesale Grocers Welcome Plan to Promote Uniform Food Laws

By FRED. R. DRAKE

Chairman Pure Food and Legislative Committee, National Wholesale Grocers Association

THIS department is heartily in favor of more uniform laws in the manufacture and labeling of food products. Just how this may best be brought about is somewhat of a problem, but one which should not be hard to solve if the several States will exercise the proper spirit of co-operation and a real desire for uniform laws and regulations.

As to the best method of bringing this about I know of no better medium than through the food and drug officials' association.

Through the Federal Food Control Association great good has been accomplished in working out standards and definitions for foods and it looks now as if we will soon have uniform laws in all the States governing the manufacture and branding of foodstuffs.

The Virginia pure food law gives the Commissioner, with the approval of the Commissioner and Board of Agriculture, the authority to fix and establish standards and variability permissible in any article of food, and these standards when so published shall be the standard before all courts, provided that when standards have been, or may be, fixed by the Secretary of Agriculture of the United States, they shall be accepted by the Department of Agriculture and published as standards from Virginia.

Our department has endeavored to keep the manufacturers of foods in Virginia posted as to the Federal laws governing interstate shipments. As a result we have seldom had complaints from the Federal authorities of misbranded and adulterated foods from Virginia.

I believe that if the States would look more closely into the manufacture of foods within their borders, particularly those that are intended for interstate shipments, a great deal of time, expense and annoyances would be saved.

It often happens that shipments coming from other States do not meet Federal and State regulations as to labeling. It frequently happens that artificial or imitation products are not clearly marked to show that they are artificial or imitation.

Commissioner Ladd Suggests Conference by Group States on Food Laws

By E. F. LADD, Food Commissioner of North Dakota

IT seems to me that existing food laws can best be made uniform through groups. States that have common interests coming together through their food departments and discussing rules and regulations that may be put in force that will be applicable to the several states. Gradually in this way if several groups of states have unified their rules and regulations the larger groups can be brought into units and their rules harmonized.

I do not believe that it is possible to enact state food laws of uniformity unless you drag down the more advanced laws to the level of the poorer laws and this is not for the protection of the consuming public, but rather have the weaker laws strengthened and brought up to the standard of the better laws. Again there are individual problems in each state that differ from those of other states that have to be contended with in the enforcement of laws and statutes or constitutional provisions that may need different procedure in one state from another. All these things must be taken into consideration and the state laws gradually raised in efficiency to protect the public and then the national laws made stronger from time to time in order to protect the consumer.

Soda Water Flavor Manufacturers Favor Calder Bill

Adopt Resolution at Convention, Also Suggesting Amendments to Haugen Package Bill

AT its fifteenth annual convention, held at the Hotel Gibson, Cincinnati, on November 8 and 9, the National Manufacturers of Soda Water Flavors adopted resolutions approving the Calder bill for bringing about uniformity in food legislation; suggested the amendment of the Haugen package bill in several particulars, objected to the rulings of food control officials on the use of capsicum in ginger ale and urged relief in the situation with regard to obtaining supplies of alcohol for the manufacture of their products.

It was one of the most largely attended and most successful conventions ever held by the association, the companies represented being as follows:

The E. Berghausen Chemical Company, Cincinnati; Alfred Berghausen, Henry Kassens.

Chero Cola Company, Columbus, Ga.; W. E. Upchurch.

Coca Cola Company, Atlanta, Ga.; W. P. Heath.

Crescent City Carbonate Company, New Orleans, La.; W. S. Bickford.

Downey-Turnquist & Company, Chicago; W. E. Story.

Jacob House & Sons, Buffalo, N. Y.; F. H. House, E. L. House.

Hurty-Peck & Co., Indianapolis, Ind.; G. J. Hurty.

W. H. Hutchinson & Son, Chicago; D. W. Hutchinson.

Ladwig-Schlueter Company, Milwaukee, Wis.; P. Reinke.

The Lehman-Rosenfeld Company, Cincinnati; Alvin J. Lehman.

The Liquid Carbonic Company, Chicago; J. L. Sugarman.

Henry Magnus, Chicago; Henry Magnus.

Hugh J. McMackin Company, Boston; Hugh J. McMackin.

Monarch Manufacturing Company, Atlanta, Ga.; Thomas M. Murphy.

The Northwestern Extract Company, Milwaukee, Wis.; Aug. C. O. Peter, Edw. F. Kunkel.

Schoenhofen Company, Chicago; George B. Sippel.

H. C. Schranck Company, Milwaukee, Wis.; H. C. Schranck, Walter Schranck.

The Schuster Company, Cleveland; J. J. Schuster.

Sethness Company, Chicago; C. O. Sethness.

Standard Bottling & Extract Company, Boston; O. A. Atkins.

Wm. J. Stange Company, Chicago; Wm. J. Stange.

Theall-Stefan & Company, Cleveland; F. M. Theall.

Theonett & Co., Inc., Chicago; Samuel F. Hirsch.

Tropical Fruit Juice Company, Chicago; W. W. Hogle.

S. Twitchell Company, Philadelphia; Charles O'Connor.

Warner-Jenkinson Company, St. Louis; W. F. Meyer.

Whittle & Mutch, Philadelphia; Samuel H. Mutch, Harry Whittle.

Considering that the organization is a comparatively small one, having only 41 members, the above named attendance was excellent. While the membership is not large, it is comprised of practically all of the larger manufacturers engaged in the business of supplying the bottling trade with soda water flavors.

The officers elected were as follows:

President, C. O. Sethness, of Sethness Company, Chicago.

Vice-President, H. C. Schranck, of H. C. Schranck Company, Milwaukee, Wis.

Treasurer, H. E. Harrison, of The Liquid Carbonic Company, Chicago.

Secretary, Thomas E. Lannen, Chicago.

The directors are the foregoing named officials and Hugh J. McMackin, of Hugh J. McMackin Company, Boston; Charles O'Connor, of S. Twitchell Company, Philadelphia; Henry Magnus, of Henry Magnus, Chicago; C. H. House, of Jacob House & Sons, Buffalo, N. Y.; Samuel Mutch, of Whittle and Mutch, Philadelphia.

The more important actions taken by the association are expressed in the following resolutions:

Capsicum in Ginger Ale

WHEREAS, The officials charged with the enforcement of the National Food and Drugs Act have undertaken to enforce the provisions of Food Inspection No. 177, by requiring the presence of capsicum to be stated on the labels of ginger ale; and

WHEREAS, Capsicum is a normal ingredient of ginger ale and has always been so regarded by practically the entire soft drink bottling industry engaged in the manufacture of ginger ale, and said food inspection decision is vitally defective in failing to recognize both capsicum and caramel color as normal ingredients of ginger ale; and,

WHEREAS, This Association has heretofore unqualifiedly condemned said Food Inspection Decision 177 for the reasons aforesaid and has protested to said U. S. food officials against said decision and urged its immediate recall, but without avail; and,

WHEREAS, It is still the sense of the National Manufacturers of Soda Water Flavors, in annual convention assembled, as it was at our last annual convention, that capsicum is a normal ingredient of ginger ale, and that caramel color is a normal ingredient of ginger ale, and that the presence of said ingredients should not be required to be stated on the labels of ginger ale, and cannot legally be required to be stated on the labels of ginger ale under existing laws of said U. S. food officials, and that said officials in taxing such action as referred to have done so wholly without warrant of any law, their action resulting in nothing more than unwarranted intimidation of the trade; therefore, be it

RESOLVED, That we co-operate with the American Bottlers of Carbonated Beverages in its efforts to forestall, either amicably or by litigation, the attempt of said food officials to foist the said ruling on capsicum upon us and the soft drink bottling industry of the United States.

Haugen Package Bill

WHEREAS, The so-called Haugen Package Bill, formerly known as H. R. 8954, and now known as H. R. 10311, is still pending in the House

of Representatives of the Congress of the United States, and is still as objectionable as it was at the time of our last annual convention in 1919, and it appearing that the resolution which we adopted at that time was not, for good reasons, forwarded to the members of Congress; be it

RESOLVED, That we, the National Manufacturers of Soda Water Flavors, reaffirm the action which we took on this subject at our last annual convention and readopt the resolution which we passed on the subject at that time and which was as follows:

"WHEREAS, There is pending in the House of Representatives of the Congress of the United States a bill known as H. R. 10311, and which was formerly known as H. R. 8954, and which proposes to amend the National Food Law in such a way that while it would enable the United States Department of Agriculture, through its Bureau of Chemistry, to prosecute those guilty of real fraud and deception, it is so worded that it would also enable that department, through its said bureau, to prosecute honest manufacturers of foods and drinks for innocent acts, such prosecutions being unreasonable and frivolous in their nature; and

"WHEREAS, Said bill affords no protection to honest manufacturers against such unreasonable prosecutions; and

"WHEREAS, It is the sense of this association that the officials charged with the enforcement of the National Food Law cannot be trusted to act with reason in the enforcement of said act and have been and will continue to be prone to institute civil and criminal prosecutions frivolous in their nature, and have prosecuted innocent manufacturers for innocent things and will be likely to do so in the future if given power to do so by the Congress of the United States, and have already taken action which has resulted and will continue to result in great damage to the soft drink manufacturing industry of the United States, said action being that said United States Department of Agriculture has established a standard for ginger ale and sarsaparilla which, among other things, failed to recognize as a normal ingredient of those products the caramel coloring, which is and always has been a normal ingredient, and which gives each of those products its natural color and without which each would be water-white in color, and under which standard each of said products would have to be labeled 'Artificially Colored,' to the great annoyance and expense of the entire soda water bottling industry, and which labeling would accomplish no material good of any kind or give any consumer of those drinks any information in which they are at all interested; therefore be it

"RESOLVED, That we are opposed to the passage of said bill as now drawn and as reported from the Committee on Agriculture, and recommend that said bill, to wit: H. R. 10311, be amended so as to deter the said U. S. Department of Agriculture from instituting frivolous and unreasonable prosecutions, as follows:

"On page 2, line 2, insert after the word 'shaped' the words 'that it evidences an intent,' and strike out the word 'as' at the end of the line 2 of said page 2, and the words 'likely to' at the beginning of line 3 of page 2.

"Also amend said bill by inserting after the word 'therein' at the end of line 4 on page 2 the words 'upon a reasonable examination of the package,' so that said clause will read: 'Or if it be in a container so made, formed, or shaped, that it evidences an intent to deceive or mislead the purchaser as to quantity, quality, size, kind, or origin of the food therein upon a reasonable examination of the package.'

"Also amend said bill as follows:

"On page 2, line 11, after the word 'package' insert the words 'evidences an intention of not having been filled with the food it contains for the purpose of fraud and deception' and strike out the word 'be' at the end of line 11 on page 2, and the words 'not filled with the food it purports to contain' in line 12 on page 2.

"Also amend said bill in line 13 on page 2 by striking out the word 'may' and inserting in lieu thereof the word 'shall'; so that said clause will read:

" 'Fifth: If in package form, and irrespective of whether or not the quantity of the contents be plainly and conspicuously marked on the outside of the package in terms of weight, measure, or numerical count, as provided in paragraph "Third" of said Section 8 as amended, the package evidences an intention of not having been filled with the food it contains for the purpose of fraud and deception: Provided, however, that reasonable variations and tolerances shall be established by rules and regulations made in accordance with the provisions of Section 3 of this Act.'

"AND BE IT FURTHER RESOLVED, That our secretary be directed to forward a copy of this resolution to all of the members of Congress."

Calder Bill

WHEREAS, The Calder Bill (S. 3011) is still pending in the Congress of the United States, and it appears now, more than ever, that uniformity of food laws ought to be brought about at the earliest possible date, the various National and State food officials at their last annual convention in St. Louis in October of this year, having emphasized this fact more, possibly, than ever before; be it

RESOLVED, That we, the National Manufacturers of Soda Water Flavors, reaffirm the action which we took on this matter at our last annual convention in Chicago in November, 1919, in adopting the resolution that was adopted then and which was as follows:

"WHEREAS, There is now pending in the Congress of the United States a bill known as the Calder Bill (S. 3011), the passage of which would do more to bring about uniformity of food laws than all the attempts that heretofore have ever been made on the subject, and which bill is sound in principle and ought to be made the law of the land as soon as it is possible for Congress to do so; and

"WHEREAS, It is the consensus of opinion of this convention that uniformity of food laws can never be brought about in any other way than by the passage of such a law by Congress, and that interstate commerce in food products should be protected from interference from the conflicting provisions of the laws of the various states with themselves and with the National law; therefore, be it

"RESOLVED, That we heartily endorse the said Calder Bill and urge the Congress of the United States to pass the same at an early date."

Alcohol Bonds

WHEREAS, The price charged by the bonding companies for furnishing bonds to the United States Government for manufacturers of soda water flavors, flavoring extracts, and others required to have permits to purchase and use non-beverage alcohol, appears to us to be exorbitant and unreasonable; be it

RESOLVED, By us, the National Manufacturers of Soda Water Flavors, that it is the sense of this convention that the price of said bonds is unnecessarily and unreasonably high, and that during the coming year the officers and attorney of the Association should do all within

(Concluded on page 36)

Development of the Peanut Butter Industry

Extracts from a bulletin prepared by H. C. Thompson, formerly horticulturist, Horticultural and Pomological Investigations, Bureau of Plant Industry, Department of Agriculture, and published as Department Circular No. 128 by the United States Department of Agriculture

THE commercial production of peanut butter has in recent years developed to large proportions. One manufacturer alone produced about 6,000,000 pounds in 1919. There are dozens of large factories and hundreds of smaller ones. All told, peanut butter is probably the most important peanut product manufactured in the United States. the peanuts used in making this butter in 1919 probably totaled six or eight million bushels, being at least five times the quantity used for this purpose in 1907.

In the early days of its manufacture peanut butter was sold largely as a food for invalids, but it soon outgrew this limited use. Now it is considered a standard luncheon delicacy, especially in the making of sandwiches, though it is used in various other ways.

Food Value of Peanut Butter

Peanut butter is a wholesome and highly nutritious food, having a much greater food value than round steak. Jaffa, in Farmers' Bulletin 332, entitled "Nuts and Their Uses as Food," gives the following analyses of peanut butter and round steak. *Peanut butter.*—Water, 2.1 per cent; protein, 29.3 per cent; fat, 46.5 per cent; carbohydrates, 17.1 per cent; ash, 5 per cent; fuel value, 2,825 calories per pound. *Round steak.*—Water, 65.5 per cent; protein, 19.8 per cent; fat, 13.6 per cent; carbohydrates, none; ash, 1.1 per cent; fuel value, 950 calories per pound.

These figures show that peanut butter contains one and a half times as much protein, more than three times as much fat, nearly five times as much ash, and three times as much fuel value as round steak. In addition to this, peanut butter contains 17.1 per cent of carbohydrates, while steak contains none. Pound for pound, peanut butter has a much greater food value than round steak, though it sells for a lower price.

Commercial Manufacture of Peanut Butter

In the manufacture of peanut butter only the best materials should be used. High-grade butter can not be made from inferior nuts. On the other hand, the best stock will not make good butter unless all the work of converting it into a high-grade product is carried on in the proper way and under sanitary conditions.

Fig. 1.—Roasting and cooling equipment in a model peanut-butter factory.

Most peanut-butter manufacturers secure their peanuts from the cleaning and shelling factories, where they have already undergone the cleaning, shelling, and grading processes. This is generally considered the better method, although a few factories prefer to secure farmers' stock peanuts and do their own cleaning and shelling. Where the manufacturer secures the uncleaned unshelled peanuts, he should do the cleaning and shelling in a separate building, to prevent the dirt incident to the cleaning from getting into the butter.

The varieties of peanuts most commonly used in the manufacture of peanut butter are the Virginia Bunch, Virginia Runner, and Spanish. Some factories use the Virginia varieties alone, while others use a mixture of Virginia Runner or Virginia Bunch and Spanish. It is thought by some that the Virginia varieties do not contain enough oil, while the Spanish peanuts contain too much. For this reason a mixture of the two types is used.

As the peanuts come from the farms they are mixed with considerable dirt and trash, which must be removed before they are ready for the market. After cleaning, the shelling stock of the large-podded varieties of the Virginia type is separated from that to be sold in the shell. Peanuts of this type always include a small percentage of pods that have been damaged or discolored in the field. These, together with the pods that become broken in handling, are used for shelling. Of the Spanish and Valencia varieties the greater portion is shelled, since these varieties are not popular as roasted peanuts.

The Valencia peanut makes butter of excellent quality, but as this variety is grown on a very small scale its use is necessarily limited. The reason the Valencia is not cultivated to any great extent is that it is difficult to harvest because the nuts pull off in digging.

Three grades of shelled peanuts are usually produced in the shelling factory, these being known as Nos. 1, 2, and 3. The No. 1 consists of

the perfect, unbroken kernels, the No. 2 of split and broken kernels, and the No. 3 of the finely broken kernels and the small shriveled peas known as "pegs." Only the No. 1 and No. 2 grades of shelled peanuts should be used in the manufacture of peanut butter. The third grade makes an inferior product, which is unfit for human consumption.

Factory and Equipment

In selecting a location for a peanut-butter factory the transportation facilities, labor supply, and proximity to the raw material and to consuming centers should be considered. The factory building should be located near a railroad line, so that a spur track or siding can be used for loading and unloading materials and supplies without having to haul them on wagons or trucks. The labor supply requires special attention, as women are used more than men in a peanut-butter factory, and unless there is work in the community for their husbands and fathers it is difficult to secure sufficient help.

It is not necessary that the factory be located in a peanut-growing region, although such a location has some advantages. It is probably more important to be near the principal consuming centers, which are nearer the sources of supply of equipment, fuel, and accessories, such as bottles and jars. A factory located near a large consuming center has a longer haul for the raw product but a shorter haul for a large part of the finished article than the factory in the peanut-producing region. However, it would

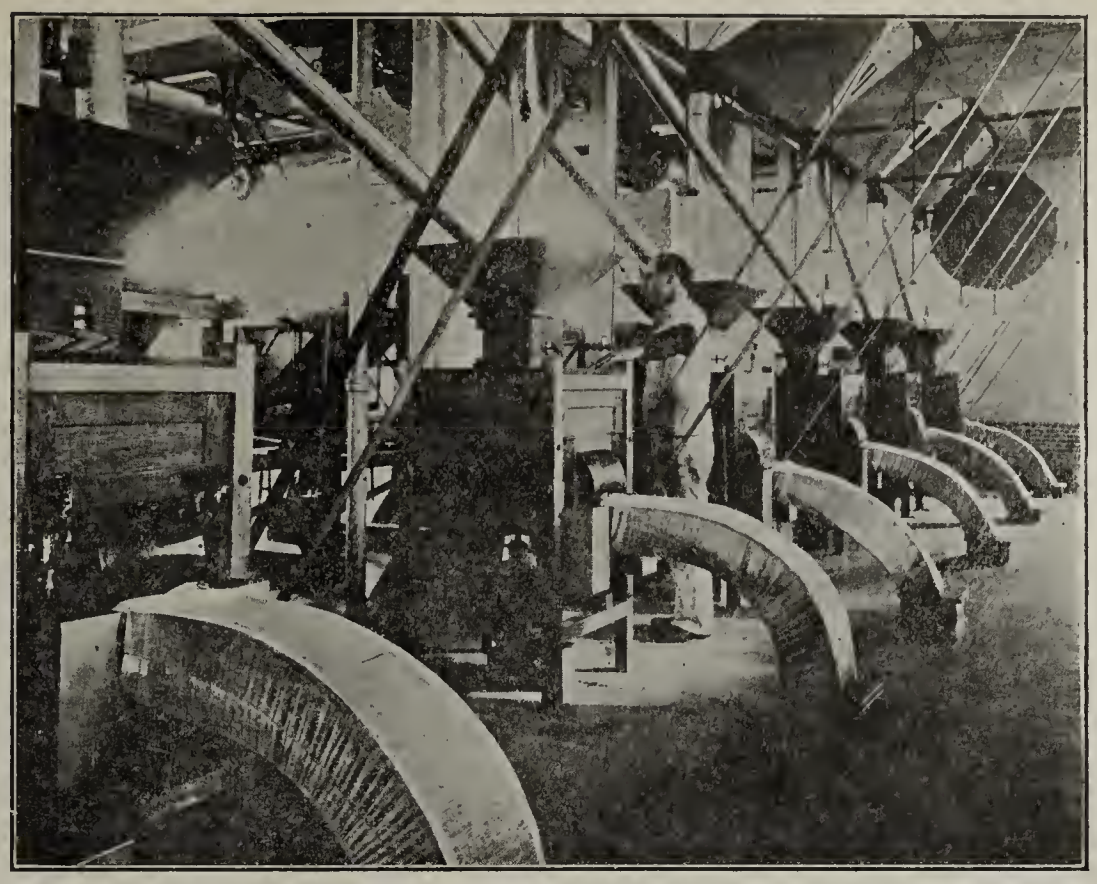

Fig. 2—A type of blanching machine used in some peanut-butter factories. These machines remove the red skins and loosen most of the germs.

be economy for the consumers in the peanut-growing sections to be able to get their supply without having to pay transportation charges for long hauls to and from the factory. In other words, sufficient peanut butter should be made in the producing regions to supply the consumers in those regions.

The model peanut-butter factory consists of a four or five-story building equipped and arranged for convenience and economy in handling the materials. The building should be light and airy and especially desmall factories have all the equipone machine to another.

Fig. 3—Picking tables used in a peanut-butter factory. The peanuts after being roasted and blanched pass over these tables, and women remove foreign particles and all unblanched and discolored pieces of nuts.

The equipment of a peanut-butter factory consists of roasters, blanchers, picking tables, grinders, bottle-filling, capping, and labeling machines, and the necessary boilers to signed for good sanitation. Some ment on one floor, but this necessitates considerable trucking back and forth, as a gravity system can not be used in delivering the goods from run the machinery, together with elevator, chutes, and suitable facilities for storing, packing, and shipping the raw material and the finished product.

Probably the ideal arrangement in a four-story building is to have the roasting machinery and the stock of raw peanuts on the top floor; the blanching machinery and picking tables on the third floor; the grinders, bottling machines, and capping machines on the second floor; and the storage, packing, and shipping departments on the first floor. In this arrangement the materials come from the top floor to the bottom floor by gravity with the minimum of hand work required in carrying them from one machine to the other.

As most peanut-butter manufacturers secure shelled goods from cleaning and shelling factories, the cleaning and shelling processes will not be discussed here.

Roasting

In the manufacture of peanut butter from shelled nuts the roasting is the first operation, and in an ideal factory this is done on the top floor. The roasting machinery is made especially for the purpose, but is similar to that used in coffee

roasting. Figure 1 shows the roasting machinery and equipment used in a good factory. In some factories the peanuts are elevated to a hopper over the roaster and are fed by gravity through a chute into the end of the roasting drum.

After the roasting is completed the peanuts are dumped from the drum into a hopper with perforated bottom and sides. This hopper is built on a truck which can be moved up to the roaster to receive the nuts and then moved back for the cooling. The cooling is accomplished by drawing currents of air through the peanuts and through the side or bottom of the hopper by means of a suction fan.

In some factories natural gas is used for fuel, while in others artificial gas, coal, or coke is employed. The temperature is more easily controlled where gas is used. The length of time required for roasting peanuts varies with the temperature and the class of goods used. When the peanuts are fresh, early in the season, it requires a longer time for the roasting process than when the peanuts have become thoroughly dried.

The temperature should not be high enough to scorch the peanuts. About 320° F. is considered right for shelled nuts, and at this temperature it requires 40 minutes to an hour to roast a batch. However, the state of roasting must be determined by the judgment and experience of the operator. As a rule, peanuts for butter are not subjected to as heavy a roast as is required for salted peanuts or peanuts roasted in the shell. If the roasting process is carried too far the butter has a dark brown color and a burned taste. Peanuts that have had a mild roast are considered more palatable and more wholesome than those that have been overroasted. On the other hand, underroasted nuts make a butter lacking in flavor and color, which does not keep as well as that made from peanuts that have been properly roasted.

Blanching

After the peanuts have been roasted and cooled they are ready to be blanched. In modern factories they are dumped from the cooling hoppers into chutes, from which they are fed into the blanching machines.

The blanching consists of removing the red skins, or seed coats, and is accomplished by machines made especially for this purpose (Fig. 2). These machines have brushes which revolve against a corrugated plate. The blanching splits most of the peas into halves and loosens many of the germs, or "hearts." After passing between the corrugated plate and the brushes the meats pass over a screen and in front of a fan. The fan blows out the skins and some of the fine particles of meal, while the germs fall through the holes in the wire screen.

In order to get a high-grade butter it is necessary to remove the skins and a large portion of the germs. The skins show in the butter as red specks and give it a slightly bitter taste. The germs cause the butter to turn rancid sooner than when they are not present. The germs and red skins are sold as feed or to oil mills, which press out the oil and dispose of the resulting cake or meal for stock feed.

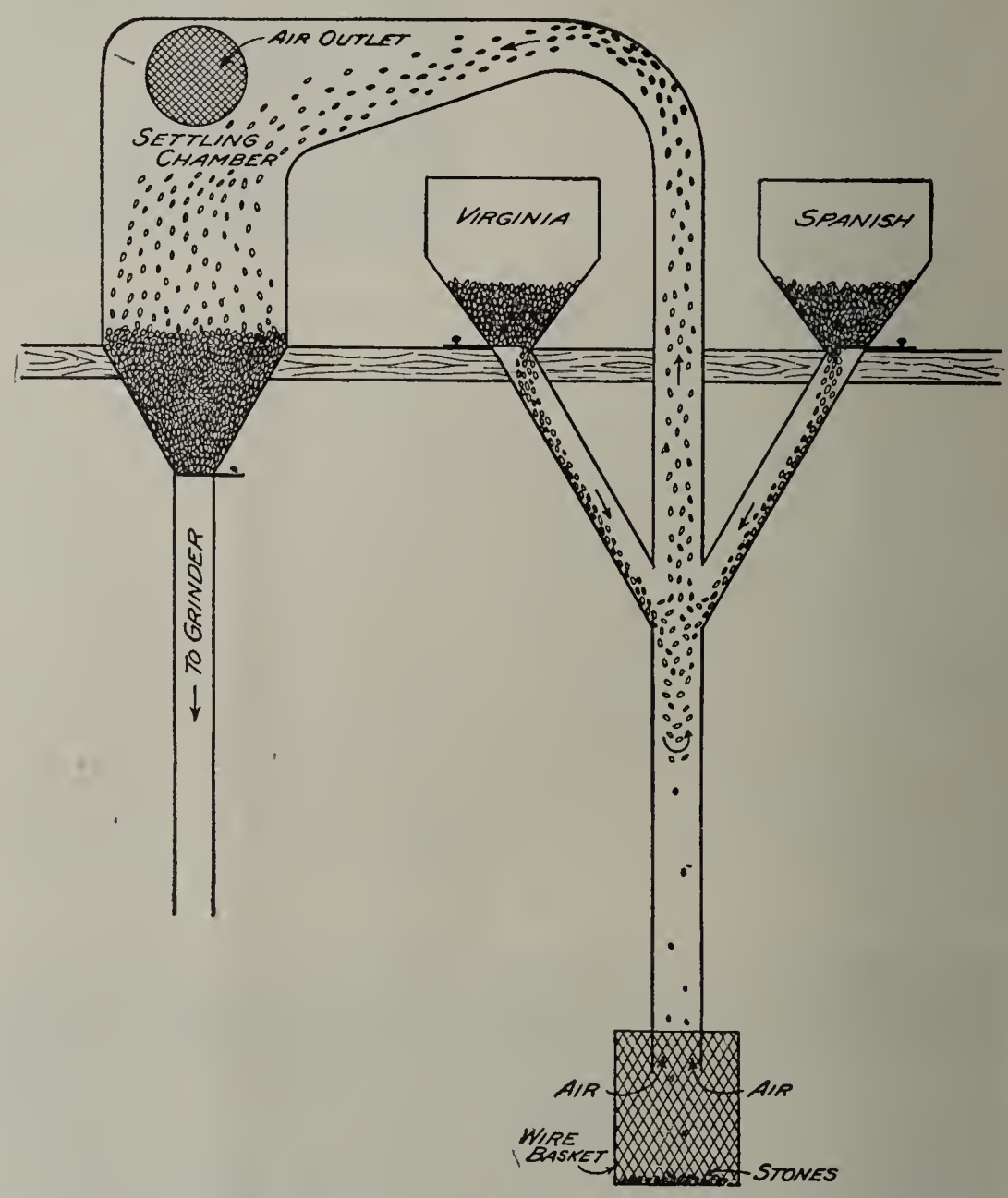

Fig. 4.—Sketch showing a device used for removing stones from the cleaned peanut meats.

Hand Picking

No matter how carefully the cleaning and grading are done in the cleaning and shelling factory, some hand picking is necessary in the peanut-butter factory. The blanched meats usually pass from the blanching machines to the picking tables, alongside of which are seated women who pick out any unblanched or discolored nuts and any foreign matter present. In one factory the blanched meats pass over a screen at the end of the picking table in order to sift out any germs that have been loosened after the material has left the blanching machine. After passing over these screens the meats move along on wide canvas belts, similar to those shown in Fig. 3. As they pass along women pick out the material which would lower the quality of the butter or detract from its appearance. These women are sometimes paid on the basis of the number of pounds of material picked out.

From the picking tables the meats fall into chutes which carry them to hoppers over the grinding machinery.

In some factories a mechanical stoner is used to remove small pebbles or pieces of stone which were not removed in the sorting process in the cleaning factory and also escaped the hand pickers. The stoner works upon a gravity basis. The peanuts, being lighter than the

stones, are drawn upward by a suction blast and the stones drop into a receptacle, as shown in figure 4. The removal of the stones is very important, as they injure the grinding machine and lower the quality of the butter. Consumers naturally object to peanut butter that is gritty.

Blending

When two grades or kinds of peanuts are used in making butter they are usually blended as they are fed into the hopper above the grinder. In one factory the blending is done in the stoner, two streams being fed side by side and blended by an air blast, as illustrated in the drawing, figure 4.

While some factories use only one variety, others use a mixture of Virginia and Spanish peanuts. One factory uses three parts Spanish to one of Virginia, while others use different proportions of these two types. The uniformity of the product where two varieties are used depends upon the completeness of the blend.

Virginia peanuts when used alone make a product lacking in smoothness unless very finely ground, but by the addition of Spanish stock the consistency is materially improved. The Spanish variety used alone makes a very smooth product but is rather too oily. A better grade of peanut butter will be produced by the proper blending of the Spanish or other variety containing a high percentage of oil with another variety having a lower oil content.

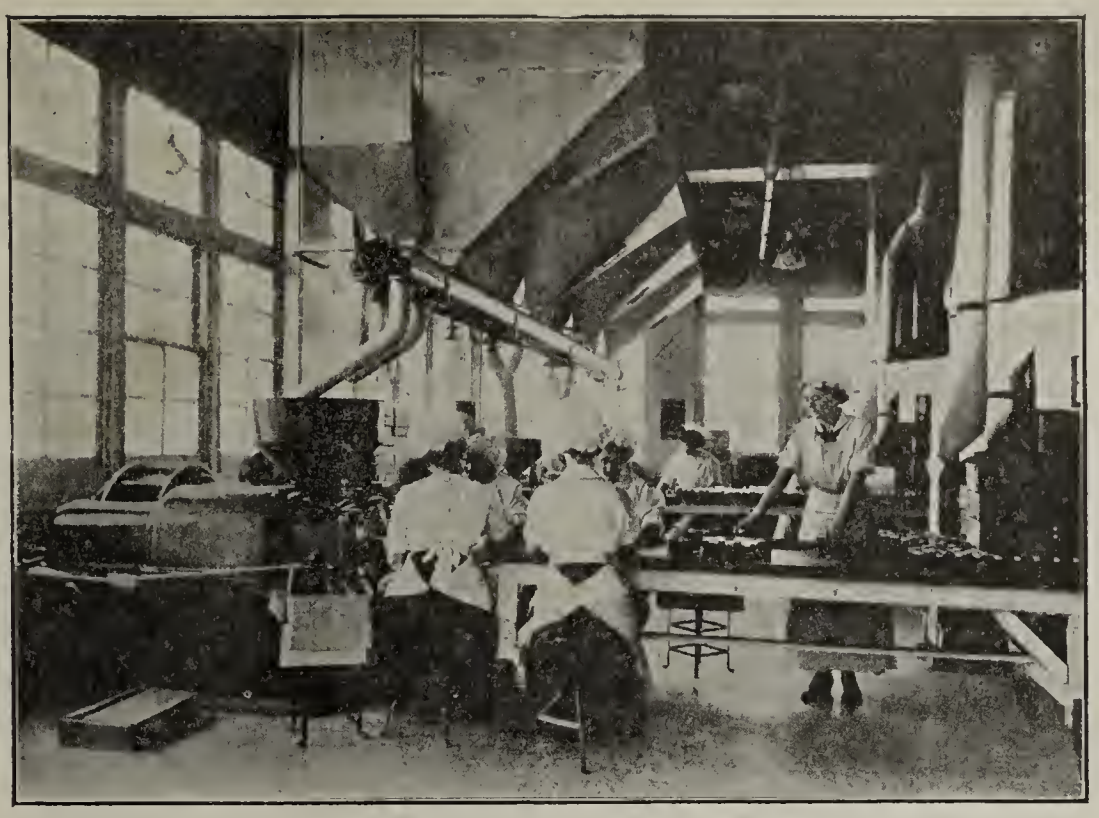

Fig. 5.—A section of a peanut-butter factory, showing a grinding and bottling machine (at the left).

Fig. 6.—A small peanut-butter grinder used in small factories.

Grinding

Commercial manufacture of peanut butter requires the use of special machinery for grinding the nuts. The butter should be brought to a fine granular form rather than a pasty consistency. When ground too fine the butter sticks to the roof of the mouth and when too coarse it has a gritty feel, which is objectionable. The aim in grinding peanut butter should be to break the oil cells apart rather than crush them. Worn or smooth grinding plates when run closely together do not give good results, because the rubbing of the butter between them makes a pasty product which allows the oil to settle out.

The grinding process produces considerable heat by the rubbing together of the plates, and great care is necessary to prevent heating the butter. Some grinders have the working parts surrounded by a water jacket, and by circulating water through this jacket the temperature can be controlled.

Large peanut-butter factories use large grinders similar to the one shown in figure 5, run by a 30-horsepower motor that will grind as much as 20 pounds of meats per minute. The small factories use machines, similar to the one shown in figure 6 but of less capacity. While the small machines do not have so great a tendency to become overheated, care must be taken to run them at a moderate speed or to allow them to cool occasionally.

Before the peanut meats are ground a small quantity of high-grade dairy salt is usually added. The proportion of salt varies from 1½ to 3 per cent by weight. Sometimes the salt is mixed with the peanuts before they reach the hopper of the grinder, but some grinding machines are fitted with a small auxilliary hopper from which the salt is fed into the machine with the peanuts by means of a worm or screw. It is very important to have the salt uniformly distributed through the butter.

Some manufacturers put their product on the market without salt or with only a small amount, as many persons prefer it with little or no salt.

Bottling and Packing

Peanut butter is put on the market in glass bottles, glass jars, tin cans, pails, tubs, and barrels. Most of the retail trade is supplied with butter in bottles or in small glass jars.

The bottles or other containers

(Continued to page 35)

Specialty Manufacturers Report Year of Progress

Annual Convention Is Held at Atlantic City—Fred Mason Reelected President

THE American Specialty Manufacturers' Association held its twelfth annual convention at Atlantic City, N. J., on November 17, 18 and 19. The convention was called to order on Wednesday by its president, Fred Mason, and after the usual preliminaries his annual report was read, a part of which was as follows:

During the reconstruction period since the signing of the armistice we have been confronted with many problems. This organization represents a unique class in the manufacturing world. There are very few products represented in this organization that people could not do without or buy in bulk.

In order to create a desire on the part of the housewife to place our product on her table, or in use throughout her house, it has been necessary and considered wise by our members to keep the price at the minimum. This in itself has applied more thoroughly since the reconstruction period, and should convince any fair-minded person that the American specialty manufacturers of this country do not need Government regulation in fixing the price for the consumer. We made no mistake a year ago in passing a resolution opposing the so-called Stephens-Kelly fixed price legislation.

Figures actually show that the increased cost of production has been nearly 200 per cent since the beginning of the war. A careful survey of figures made in the price to the consumer by the grocery specialty manufacturers of this country show that not over 50 per cent increase has been made during that period. The grocery specialty manufacturers have utilized large sums of money, previously used in advertising and sales promotion work, to absorb the difference.

Confirm Need of Specialty Salesmen

Your officers and board of directors have, to the best of their ability, followed the resolutions passed at our last convention, especially:

Resolved, That the American Specialty Manufacturers' Association does hereby record its emphatic disapproval of any request on the part of distributers acting in concert, in a given market whereby it is improperly or unlawfully sought to compel the manufacturer to merchandise his products in that market through limited channels of distribution.

Resolved, That the American Specialty Manufacturers' Association, composed of representative American manufacturers of grocery specialties selling their products through wholesale and retail grocery trade, does hereby record the fact that experience has conclusively established that the specialty salesman is a necessary factor in the economic and successful merchandising of grocery specialties. Hence we confirm the need to continue without abatement the employment of specialty salesmen as essential to the economic, efficient and successful conduct of business.

Uniformity in Food Laws

At the June 25 meeting of the directors a uniform food sanitation law resolution, as recommended by our counsel, C. W. Dunn, was duly passed and will warrant your greatest interest. I feel that if during the next year this association can bring about the putting through Congress of a bill that will make our pure food laws uniform from one end of America to the other, by the use of one label, it will warrant all the time and effort that we have put forth.

Now that we are again back to the pre-war days of hustling for business let me call your attention to the basic principle of our association that is to surround the securing and handling of such business with every possible avenue of efficiency.

The specialty order means much to us. It is the basis of all human existence, namely, the creation of a market for our product, and just as the Government backs all its money surplus so does our association back up its specialty orders. It says to the jobber our stamp on this order is a badge of business honor. We will pay your profit, if bogus.

Specialty Orders and the Jobber

We all fully realize that the jobber has much to contend with in handling specialty orders taken. The jobber delivers and the retailer refuses. This means that the jobber must cart back the goods, put them in stock and go through all the other necessary work to clean up the transaction. The manufacturer who has paid his good money to secure such an order is entitled to the information concerning such return, and unless the jobber cooperates with us to this extent we are not in a position to be of help.

Our national office has inaugurated different systems with a view of greater cooperation.

We need closer cooperation and must convince the jobber that, after all, our work helps them as much as our own members, if not more so.

With this object in view the national officers have already arranged for a joint meeting to be held with all jobbers in the near future in different sections of New York State. Other states will be taken up as quickly as possible.

The manufacturers feel that they understand the manufacturing end, and the jobbers are the rightful distributers. When, however, a jobber aims to become our competitor as well as distributer, then we feel he is making a most serious mistake. He is "rocking the boat" and subjects the jobber to all the danger that this implies. It is manifestly unfair to play both ends against the middle.

Rapid Changes Taking Place

We are confronted by greater questions of trade than ever before in the history of our country. The old channels are very much disturbed. So many rapid changes are taking place that the oldest of us are gasping for breath wondering just what will come next. I know of no line that is affected by so many issues as the grocery business.

The past year, I believe, has shown greater increase in membership than any year during the life of the association. Our finances

have kept pace with our increased membership. The various committees have been most active and deserve our thanks for their good work and interest.

Membership by and through the use of our stamp obligates clean cut and honest merchandising, and such as do not subscribe and strictly observe such principles are not welcome, and will not be tolerated.

Excess Profits Taxes

One matter that should have our very careful consideration is the present excess profit tax legislation. It seems to me that it would be a splendid thing for our organization to lead the fight in convincing Washington that this excess profit tax was a burden to all manufacturers and is a breeder of extravagance and unnecessary expense. It would be far better to have revenue stamps placed again upon our checks and upon the direct sale of commodities so that the consumer would know just what tax he or she was paying when purchasing an article and could then be the arbiter of whether they could afford it or not.

Then the manufacturer could get back to the old fundamental of business of figuring his cost of production, advertising and promotional work, without having to first consult a Philadelphia lawyer as to what effect it will have upon the excess profit before making any ruling in his business.

Right to Select Customers

If there is any principle that is fundamental and essential to the freedom and independence of trade it is the right to select our own customers, to sell or not, as we please, to whom we please. The Government has seen fit to challenge the exercise of that right under the circumstances prevailing where a manufacturer declines to sell to dealers who do not observe the fair resale prices suggested by him, in order to protect his business from the detriment that flows from the charging of unfair resale prices.

The continuance of this practice was forbidden at the expense of criminal prosecution, and it remained for two of our own members, Colgate & Co. and the Beech Nut Packing Company, to bear the burden and expense and to achieve the glory of successfully defending this fundamental right of refusal against a threatening destruction.

Georgia's Obnoxious Laws

It is my pleasure also to refer at this time to another legal matter in which this association is very deeply interested. I refer to the suits instituted by and under the direction of this association to contest the enforcement of the Georgia foreign corporation tax law against several of our members. The court has granted our application for injunction and, as the situation now stands, the enforcement of this statute is enjoined. The question of state taxation of foreign corporations is ever becoming increasingly important and this association can perform no greater service than contesting the application of these laws to interstate commerce and the enforcement of any statute which is inherently unconstitutional.

Guarantee Against Decline

It is also advisable that I should briefly refer to the question of guarantceing prices against decline. Our association has very properly taken no official position upon this question, for the reason that there is a hopeless diversity of opinion with respect thereto among our members and for the further reason that this is a matter which should receive independent individual consideration. We were represented at the recent hearing upon this subject before the Federal Trade Commission. No statement, however, was made in behalf of the association. It is our opinion, as a result of this hearing, that the Federal Trade Commission will not issue any general regulation restricting the practice of guaranteeing prices against decline.

All trade practices derive their character, both in fact and law, from their use. Almost any trade practice may be fairly or unfairly used, depending upon the attending circumstances. There is, therefore, at the present time, no legal restraint upon the ability of a manufacturer to effect such guarantee if he desires to do so, subject to this precaution: he must be prepared to defend its legality as a fair trade practice upon challenge.

Officers Re-elected

The old officers were re-elected as follows:

President—Fred Mason, Shredded Wheat Company.

First vice-president—W. W. Frazier, Jr., Franklin Sugar Refining Company.

Second vice-president—James M. Hills, Hills Brothers Company.

Third vice-president—Louis McDavit, Colgate & Company.

Treasurer—D. O. Everhard, Ohio Match Company.

Directors, the above officers and the following: J. T. Williams, the Creamette Company, Minneapolis; R. R. Moore, Diamond Crystal Salt Company, St. Clair, Mich.; J. F. O'Brien, Kellogg Toasted Corn Flakes Company, Battle Creek, Mich.; Charles F. Healy, Carnation Milk Company, Chicago. These four succeed B. F. Amos, R. P. Benedict, A. C. Monagle and Dr. J. S. Goldbaum, who retire under the by-laws.

At the meeting of the new executive committee H. F. Thunhorst was re-elected secretary.

Among the speakers at the various sessions were Charles Wesley Dunn, the association's counsel; William L. Sweet; Victor Murdock, chairman of the Federal Trade Commission, Washington; F. W. Smith, chairman of the official classification committee, New York; Arjay Davies, President National Wholesale Grocers Association; Truman A. DeWeese, director of publicity, Shredded Wheat Company; J. A. Ulmer, president, National Retail Grocers Association, and James Foust, director Bureau of Foods, State Department of Agriculture of Pennsylvania. Some of these addresses are reproduced in whole or in part in this issue.

Resolutions

The resolutions adopted are summarized as follows:

Declaring special bonuses to jobbers and salesmen for preferentially pushing products as "unfair, vicious and pernicious," denouncing the use of such practices and inviting the cooperation of all the other grocery trade organizations in stamping out that form of intensive salesmanship.

Recommending the enactment of a Federal law providing that states shall not have the right by legislation or regulation to interfere with the free distribution of food products in interstate commerce which conform to the Federal food, drug and insecticide laws. This is substantially the well known Calder bill.

Favoring the enactment of a general food factory and storage sanitation law by congress.

Urging the repeal of the excess profits tax and the substitution therefor as a revenue measure, of a general sales tax to be paid at source.

Reaffirming the association's attitude as to the economic value of the specialty salesman and declaring him a necessary and indispensable factor in efficient and economical distribution.

Reiterating the association's dis-

approval of attempts by distributors to restrict the freedom of manufacturers in choosing such channels of distribution as they like.

Pledging the association and its members to lend all possible cooperation in sane and sound economic measures of reconstruction during the present tangled business readjustment conditions.

Favoring the negotiation of special hotel rates for specialty salesmen.

Recommending the use of interchangeable mileage books on railroads.

Favoring the standardization of bill heads and stationery among the members in cooperation with a committee of the National Wholesale Grocers' Association.

Favoring the encouragement of the metric system of weights and measures and the double marking of weights and measures by both systems in goods packed for export.

Favoring the Haugennet weight bill now pending in congress. Urging a more rigid compliance with the terms of cash discount when deducting the same from invoices.

Adulteration and Misbranding of Foods Now Less Than One Per Cent

By JAMES FOUST
Director of Bureau of Foods, Pennsylvania

FOOD laws are of comparatively recent origin. It is only 25 years since the passage by the legislature of Pennsylvania of the first comprehensive statute.

Fifty years ago, the population of the United States was 31,443,322. Today is is approximately 110,000,000. Fifty years ago, four-fifths of the homes produced their own food. They had large gardens, raised their food in the summer for consumption in the winter. Cabbage and potatoes would be buried in some cases; in other cases, placed in cellars. Fruits and vegetables would be canned in the homes, and jellies, jams, preserves, and the like prepared. Each family would raise its own pork. Butchering around Thanksgiving was going on nearly everywhere. Many of the homes kept cows, and those which did not were supplied with milk by those who did.

The grocery store, fifty years ago, was a small institution, handling coffee, tea, sugar, spices, extracts, etc., which constituted the usual stock. Today, the system has changed. The manufacture and preparation of foods, including fruits and vegetables, has been transferred from the home to the factory. Few homes do any canning; less put up preserves, jellies and jams. The raising of pork is a thing of the past. The ringing of the bell of the kind faced cow has disappeared in our cities, towns and villages, due to changed conditions and health regulations. The grocery store has ceased to be a small institution and is now on every corner doing an enormous business, handling practically everything necessary from the meal in the home of the poor to the banquet halls of the rich. With the increase in population from thirty-one million people to one hundred and ten million in fifty years such wonderful changes should be expected.

The growing necessity for such laws as I have referred to is to be found in the changing social conditions of our people. The transportation of food and food products from long distances with the problems of preservation and protection incident thereto was not so important then as now. The canning industry was unknown. Many of the manufactured foods on the market today were not in existence. We did not then reach forth to every clime and country for the supply of our tables. As our method of living has become more and more artificial and further and further removed from the simplicity of our fathers, the danger of contamination and opportunity for adulteration of our foods has become greater and greater. In these increasing opportunities for adulteration and dangers of contamination are to be found the reasons for the increasing stringency of our food laws.

Under the conditions which have just been described the American specialty manufacturer becomes a positive necessity. We have learned during the passage of the years much about the danger in handling food commodities from bulk in retail grocery stores. Your great organization, preparing food amid perfect surroundings and putting it up in packages, has greatly reduced the perils which were too common in the past. In former times and under former conditions little attention was paid to the surroundings, and cats, rats, mice and all sorts of vermin had free access to food products sold from bulk. You have changed all this and have thus performed a work that not only protects human life, but entitles you to universal respect and sincere thanks.

Allow me to quote from my address delivered over a year ago in the City of New York: "The National Canners' Association has revolutionized the canning industry. By the expenditure of large sums of money and the exercise of scientific skill in reaching the public through various interesting publications, this association has absolutely eliminated the odium associated with the industry a quarter of a century ago. The members of the association got their products right and then proved the truth of their statement by the superior quality of their goods."

The same principle applies to the American Specialty Manufacturers' Association, the National Wholesale Grocers' Association and also to the state wholesale grocers' associations. These are truly wonderful organizations, reaching every section of our country. They have at their heads the brightest business minds the

*Extracts from address before American Specialty Manufacturers' Association at Atlantic City, New Jersey, November 18, 1920.

country is capable of producing. In each branch of the business there are brilliant orators, convincing writers, all working together harmoniously for the purpose of bringing to pass the very thing for which trade organizations were established.

It is a common saying that "cleanliness is next to godliness." A famous scientist expressed a similar idea when he said, "soap is the measure of civilization." The American people have always been proud of the cleanliness of their homes. Today they are thinking a great deal about sanitation, and especially about sanitation in the production and handling of their food supplies. Women's clubs all over the land are systematically discussing the subject and demanding a betterment of conditions, and every day the newspapers and magazines devote columns to it.

Our food laws reflect this condition of public demand, and state after state is enacting sweeping sanitary laws in response to it.

When the buyer thinks much about a trade condition, the wise seller will try to think and act ahead of him.

Package Goods and Sanitation

Formerly, the kind of goods the grocer handled made sanitation difficult to maintain; but the general replacement of bulk goods by attractively wrapped sanitary package goods has created a condition much more favorable to cleanliness and freedom from contamination.

Adulteration and misbranding of foods are of two kinds: conscious and inadvertent. The one springs from deliberate purpose. The other is usually the product of carelessness. One is just as dangerous as the other.

Our food laws are intended to reach both classes. The whole range of governmental activity presents no agencies more important to the public welfare than those which are guarding the food supply of our people. Pure food cannot be secured by good laws alone. Back of the laws must be the officer or officers commissioned to enforce such laws. Back of such officers must be an enlightened public sentiment sustaining such laws and holding up the hands of such officers. A public press that will consistently and persistently stand for the public welfare; courts that will construe such laws so as to fully and effectivcly accomplish the purpose of their enactment; and last, but by no means least, such organizations as the American Specialty Manufacturers' Association — fair-minded and law-abiding. May I add a "don't?" Don't forget that every branch of the trade, well and properly organized, assists the food control official.

I am glad to be able today to report great progress in the contest for the purity of our food supply. When the Act of 1895 was passed by our legislature, approximately 30 per cent of the staple groceries examined by our chemists was adulterated or misbranded. Today, of the large amount of food handled by the wholesalers and jobbers that finds its market in the State of Pennsylvania, less than one per cent of staple products is found by our chemists to be adulterated or misbranded under our laws.

Very Little Adulteration or Misbranding Now

Practically all of the adulteration or misbranding in our foods today is found in such products as are supplied locally and that do not pass through the hands of our wholesalers ice cream, soft drinks, sausage and other products locally produced.

The situation as to the purity of our food supply has reversed itself in twenty-five years. Then the adulteration was generally found in the manufactured, stored and transported foods. Now it is found usually in the locally produced foods. What has produced this result? Good laws, proper enforcement, the public press, public sentiment, the enactment of the National Food and Drugs Act, and the efforts of the Government to regulate interstate shipment of misbranded and adulterated foods, and the importation of such foods. All these have been potent factors. But I would not be fair to the public or to the truth of history if I did not say now what I have said on many former occasions — that too much credit cannot be given to the honest food manufacturers! and above all, to organizations such as the American Specialty Manufacturers' Association. Your organization has always demanded of your members compliance with all of the requirements of our laws and regulations. Your association has, therefore, been a potent influence in conserving the public health and in bringing about honest dealing as to the commodities which your members handle.

Now I hope that from this rough sketch I have drawn, you will see clearly that I believe that the efforts of the honest manufacturers and dealers can be most helpful to the food commissioner and the cause he serves; indeed, that exchange of facts between them and him, either directly or through his expert advisers, is important to the highest efficiency of his service.

The co-operation of the honest and enlightened manufacturers and dealers, and of the public press, with the director of the bureau of foods has driven most of the grosser forms of adulteration from our foods. Their sanitary production and handling is fast coming to be regarded as even more important. While the laws committed to me for enforcement contain little that is specific upon food sanitation, I desire to use this opportunity again to express my sense of its very high importance.

The Responsibility of the Food Manufacturer

By J. A. ULMER
President, National Retail Grocers Association*

THE manufacturer who believes that his responsibility ceases upon delivery of his product, is slated for extermination; your responsibility extends not only to your broker or wholesaler but continues on to the retailer and the buying public. It is only when the consumer is satisfied, that your responsibility ceases. The one outstanding principle which you have fought for (and justly) was to see that your specialty contracts are lived up to. I am happy to report to you that at our last convention which was held in Atlanta, Georgia, a resolution was unanimously adopted that all retailers are instructed to honor and live up to the terms which are agreed on all specialty orders having the stamp of the American Specialty Manufacturers' Association. We are continually calling

Extracts from an address delivered at the annual convention of the American Specialty Manufacturers Association at Atlantic City, N. J., November 17, 18 and 19.

the attention of the retail grocer to this resolution, also telling him if he does not wish to accept the goods, then he should be man enough not to affix his signature to any order that he intends to countermand.

In these times when there appears to be a tendency toward a downward trend in the market, there are many business men who have had a change of heart and are trying to evade accepting the goods which apparently had been ordered in good faith. As president of the National Association of Retail Grocers I want to go on record as being opposed to this practice. It is not justifiable. I hope the retailers who are guilty of such practice will soon see the error that they are committing. It is a disgrace upon the grocery business and I am sure that all good thinking retail grocers will agree with me upon this question. Certainly such practice does not help to restore business and is only a serious reflection upon the integrity of the offending merchant.

The Chain Store

At the present time the average retail grocer is being confronted with a problem which is quite vexing. The growth of the chain store has been a matter of grave concern, and while the retailer has been wrestling with the problem for some time, yet I believe that it is also a matter of great concern to the manufacturer. You men who have spent years in perfecting your product and also large sums of money in advertising in order to create the demand, have not fully realized the amount of injury that you may suffer by the tactics which many of the chain store systems are using. It has been my observation that your well advertised product is being used as a bait to ensnare the unwary. Usually it has been the practice to cut the price of a well established article which had been advertised to sell at a certain price retail, in order to arouse suspicions and distrust in the eyes of the consumer. Oftentimes some well known brand has been cut below the wholesale list, so as to place the independent retailer in a false light in the eyes of the public, thereby attempting to create the impression that the independent retailer is a gouger and a profiteer and that the consuming public's only salvation is to patronize the chain store. Once having gained the consumer's confidence, they naturally will push their own brands. Some of the large chain stores operating have grown to such an extent that we cannot afford to ignore their existence. I believe that their proposition is of just as serious a consequence to the American specialty manufacturer as it is to the independent retailer who has built his business on the foundations of personal service.

I want it to be perfectly understood that I am not here for the purpose of fighting the chain stores; they are the result of a condition. The past six years, due to a constantly rising market owing to war time activities, have proved to be an opportune time to foster this particular type of competition. On behalf of the thousands of independent retailers, I am only asking that you manufacturers of grocery specialties play the game squarely at all times and not allow yourselves to be induced to give the chain stores an advantage over the independent retailer. I happen to know that there are some manufacturers who have placed the chain store operator on the direct list, which is indeed anything but fair unless you give all dealers the same right.

One of the outstanding features during the recent war time activity was the loyalty of the American specialty manufacturer. While prices were soaring to unheard of heights, you men apparently did not take undue advantage of an unusual condition; of all the necessities of life the products of the American specialty manufacturers were cheap in comparison with other commodities. It is a record that you can well be proud of, just as we are proud of the excellent record that the retailer had made during these times and I attribute a large part of this commendable showing to the activities of the American Specialty Manufacturers' Association as well as the activities of the many retail grocers associations who responded so nobly to the rulings of the United States Food Administration. Yet there are still some misguided people who believe that because you are manufacturers and we are retail distributors of foods, that we are bloated profiteers.

Peak of High Prices Has Passed

There is no question in my mind but that the peak of high prices has been reached; the press has been agitating for some time that prices were coming down which had its effect in stampeding some merchants and manufacturers into reducing prices, in many instances taking a loss with the hope of reducing their stocks. Instead of stimulating demand, the effect has been directly opposite as the public is still awaiting further reductions; this necessarily created a slump in business. The sooner that we, as retailers, and you, as manufacturers, can assure the public that business has been stabilized, then confidence will be restored.

Early last month, the Federal Trade Commission had a hearing of all those who were interested in the matters of the manufacturers' guarantee against price declines. The National Association of Retail Grocers was represented by a committee at this meeting to carry out the provision of a resolution which was unanimously adopted at the Atlanta convention. Our contentions were that we oppose any guarantee against decline in price unless same was extended on to the retailers. We believe that the large majority of the retailers purchase their supplies from the wholesaler, who when he participates in a price decline, does not make any concessions to the retailer; also by reason of the fact that the retailer who happens to be on the direct list of the manufacturer in this manner obtains an unfair advantage over his less fortunate competitor. As yet no decision has been rendered.

New Cleveland Company to Make Margarin

The Ko-Ko-Mar Company, Cleveland, Ohio, will soon begin the manufacture of margarin in its new modern plant in that city within the near future. The company is headed by J. R. Morris, president and general manager, who has been engaged in the manufacture of margarin for several years. Lauren H. Ashe, assistant general manager and chief chemist, is a graduate of the University of Pittsburgh and has devoted years to research chemistry in food products at the Mellon Institute of Industrial Research, Pittsburgh. For the past three years Mr. Ashe has been chief chemist and production manager of the Capital City Dairy Company and its successor, the Capital City Products Company, Columbus, Ohio, one of the pioneers in the manufacture of margarin. M. Leo Corbett, director of sales and advertising, was connected with the Capital City Products Company and its predecessor for 24 years. For 17 years he served as secretary, director and manager of sales and advertising.

What the Various Tea Grades Mean

How to Differentiate So as to Select the Tea Best Suited to Each Person's Taste

FOR the purpose of instructing consumers, dealers and others in the subject of tea, the J. C. Whitney Company, Chicago, tea importer, has issued a series of "Tea Talks," seven in number, which deals with various phases of the tea trade in an interesting way. These talks over such topics as "Teas of the World as America Knows Them," "Existing Tea Conditions in Japan," "How Tea is Produced in India and Ceylon," and others of a similar character. One of the booklets deals with the subject, "What the Various Tea Grades Mean," giving the salient characteristics of a number of the popular or well-known grades of tea. With the permission of the J. C. Whitney Company, we give the following extracts from this bulletin:

THE FLAVORY TEAS OF CHINA

"Twenty-five years ago the Chinese made for export a series of teas unequalled in delicacy, flavor, and bouquet by any teas of the present day, made anywhere in the world. But with the development in India of the British machine-made teas to a high degree of excellence, the Chinaman found it necessary to cheapen his product in order to compete with the Indian teas in price. This decrease in quality was followed by a decrease in export, and today, as we all know, sees India and Ceylon teas supplanting China teas almost entirely in the markets of Europe and Great Britain, as well as, to a far smaller extent, in the markets of the United States.

"The fact remains, however, that a very considerable percentage of American tea drinkers are partial to China teas, both green and black. These teas, even though below the standard of a quarter century ago, still retain to a great extent their distinguishing quality of lightness, which appears to render them agreeable to the American palate. The average Briton, on the contrary, prefers strength, thickness and blackness in his tea, and has, therefore, always been loyal to the teas of India and Ceylon.

China Green Tea Characteristics

KIANGSI PROVINCE

Keemuns—Draw a thick, sappy liquor. Distinguished by a rich aroma and flavor which are found in no other kind but the true Keemun.

Ningehows—Medium to fine grades are very superior teas. Even the second crop parcels have usually a pretty gray leaf, with some tip, closely rolled and well cured, drawing a capital liquor. Valuable teas in a blend.

Kut Oans—Sometimes known as the "Chinese Assam Pekoe." Short, rather rusty leaf, with some tip, very strong for a China tea, and is sometimes fine in quality. Has a tendency if kept too long, to develop an "herby" taste.

Kien Tucks—Peculiar, delicate flavor. Reddish infusion. Draw a liquor of good strength, and with choice quality.

Kiukiang Packed—Named from town where packed, in Hoei Ho district, away in the north. Possess fragrance and flavor. Tend to lack body, but when a thick Kiukiang is found it is worth securing, as few teas equal it.

HUNAN PROVINCE

Onfars—From the southern districts, and much prized by certain blenders. Makes a bright infusion. Marked by a "smoky" flavor which makes them great favorites in some districts.

Shan Tams—Apt to be loose and spongy in make. Marked by a "mousy" twang.

HUPEH PROVINCE

Ichang—Rich, full-bodied, flavory cup quality. The leaf is usually small and attractive. Under normal conditions a large portion of these teas are exported to Russia.

FUKIEN PROVINCE—SOUTH CHINA

Pan Yongs—Very serviceable and reliable for use in blending. The finer parcels produce a thick, rich, sappy liquor, with fine aroma and rich flavor. Excellent foundation teas may be met within the medium grades.

Paklums—Leaf prettily made, closely twisted, and black, with tip. Liquor pleasant but thin and usually lacks point.

Chingwos—Leaf evenly and tightly rolled, of a silky black complexion with some tip. Aroma fine and delicate. Liquor usually of a bright reddish color, possesses considerable strength and a fine flavor.

Paklings—Handsomely made teas from the districts immediately around Foochow. Clear but rather thin and apt to be lacking in point and stamina.

Saryunes—Excellent foundation tea for low priced blends. Apt to be reddish in appearance. Somewhat open leaf and inclined to be dusty. Rich and ripe in liquor, with plenty of sap and stamina. Valuable in a blend in every respect except appearance.

Souchongs—Made from a superior, young leaf, excelling in cup qualities, though not stylish in appearance.

Lapsings—Large of leaf, well made, good looking. Heavy rich liquor. Often show tarry flavor.

Foochow Scented Orange Pekoe—One of the most desirable of scented teas. Finer grades are of a beautiful yellow to olive green, with closely rolled leaf and some flower.

Canton Congous

Honeysuckle Congous—Marked by a peculiar "honeysuckle" flavor. Small reddish leaf. Liquor rich and full, with exquisite flavor. Make an excellent foundation for blends.

Foochow Oolong—Higher grades quite dark of leaf and well made. Medium grades larger and more loosely twisted. Poorer grades quite large, coarse and irregular. The modern Foochow Oolong does not compare in rich, full-bodied, mellow infusion with the similar gradings of Formosa Oolongs.

The Moyune Teas are distinguished by their pale complexion,

and peculiar "cowslip" seent and flavor. The varieties of Moyune and Tienkai teas (as also similar teas in other Chinese districts) are created by reference to the age of the leaf, its position on the branch, and by the make of it, as stated in Tea Talk First.

Gunpowder—Young to medium, leaves rolled in balls, ranging from Pinhead to Pea Leaf.

Young Hyson—Young to medium leaf, long twisted style.

Imperial—Older leaves, made in Gunpowder style, but looser.

Hyson—Older leaves, made in a coarse Young Hyson-Imperial style. Amongst the finer grades, made from carefully selected mature leaves, manipulated with great care, are some of the finest liquoring Green Teas produeed.

The terms "Gunpowder," "Imperial," "Young Hyson," "Hyson," are used only to describe the style of make of the leaf *after it has been manufactured,* and these names for the several makes, are qualified in the tea-trade by the names of the tea-districts where the leaf is grown.

In the tea-producing provinces of China there are numerous tea-districts, each one of which is more or less famous as a producer of high, medium or poor class teas, and these districts give their names to all of the Gunpowders, Imperials, Young Hysons and others grown and manufactured within their borders.

For example, the Anhui Province, in addition to the Moyunes, produces Foochows and Tienkais, both well known in the United States. Henee we have Foochow Gunpowders, Hysons, Imperials, and so on; and Tienkai Gunpowders, Hysons, Imperials, etc. To the tea man these distinct terms, preceding the name of the tea mean much. By them he is enabled to judge, approximately, as to quality, for he is well aware that the several districts produce teas that are far apart in point of intrinsic leaf and cup quality, and, therefore, in commercial value. Moyune teas, throughout their gradings, are, commercially speaking, superior to Tienkais; Tienkais to Hoochows and Hoochows to Pingsueys.

Green teas, in addition to being subjeet to district superiority or inferiority, are subdivided into grades of first, second, third Gunpowders, Imperials and Young Hysons, as for illustration:

Extra First Gunpowder—An exceedingly handsome "pinhead."

First Gunpowder—An exceedingly fine, rolled and regular leaf, frequently known as a "pinhead."

Second Gunpowder—Not so closely rolled.

Third Gunpowder—Usually quite loosely rolled.

First Imperial—Closely rolled, regularly formed leaf.

Second Imperial—A more loosely rolled leaf.

Third Imperial—A quite large and loosely rolled leaf.

Foong Mee Young Hyson—A large long leaf of curly roll.

Chun Mee Young Hyson—Small, hard twisted leaf.

Sow Mee Young Hyson—A small sifted leaf.

It will be seen that the above terms, therefore, refer to the roll of the leaf, whether tight or loose, and to the size of the leaf. A tightly rolled leaf is superior to a loosely rolled one. The smaller leaf teas are handsomer in make and command a correspondingly better priee.

The quality of these gradings as far as drink, leaf, body, strength and aroma are concerned, is qualified by the picking. A first picking tea will outrank one of the second picking; and a second picking tea is usually superior to one of the third picking. The regular commercial cup test must be employed to determine the quality or value of any tea.

Pingsuey Green Gunpowders, Young Hysons and Imperials are well known in this country, and are preferred by many retailers on account of their lower cost and better style. The Pingsuey teas, however, are wholly inferior to the Anhui Province Moyunes and other teas, in cup qualities.

The Teas of India and Ceylon

We have already said (in Talk Fourth) that the teas of India offer the buyer an enormous variety, on aecount of the variety of climate and altitude in which they are grown. The earlier tea estates of India were laid out, as was quite natural, in the hill country of Assam, where the wild tea tree was discovered. This province is in the Himalaya regions in the northeastern corner of the Empire, adjoining Burmah on the south, the Chinese province of Yunnan on the east and Thibet on the north.

Location of Indian Tea Estates

For some years this northeastern section produced the entire Indian tea crop, but as time went by other suitable lands were found in the western and northwestern parts of Assam, as well as in the hill and plane country to the west and in the provinces of Bengal and the Punjab (as illustrated in our map of India in Talk Fourth).

The great Northern tea-producing section of India is divided into tea districts which are known to commerce as outlined on page H of Talk First. These tea districts are subdivided into gardens of greater or less extent, and each garden has a name by which it and its product is commercially known, the name being frequently, but not always, of local Indian derivation. This garden name is usually adopted as a brand by which the entire production of the estate is distinguished from other garden teas of the same district.

Indian tea districts are quite distinctive in character, owing to distinctive climatic conditions. The elevation at which the plants are grown has also much to do with the cup qualities of these teas, and it is generally coneeded that the tea grown in the hill districts is much more flavory than that grown upon the estates of the plains.

Neilgherry Hills, Travancore, and other teas of the southwestern districts resemble Ceylons in a measure, owing, no doubt, to similarity of climate. They are lighter in body, and not so pungent as the majority of northern grown teas, and for this reason are rather more popular in the United States, where tea drinkers are not accustomed to such heavy-bodied, dark-liquoring, pungent teas as are produced by many of the Northern India districts.

Classification of India, Ceylon and Java Teas

India, Ceylon and Java teas are classified aecording to the factory sortation or separation of the leaf, and this classification is combined with their garden and district names in order to give them a preeise designation that a tea-man can understand.

Flowery Orange Pekoes, Broken Orange Pekoes, Orange Pekoes, Flowery Pekoes, Pekoes, Broken Pekoes, Souchongs, etc. (consult Talk First Page H) are all produced from the three leaves and end leaf bud which are plucked at one and the same time, unseparated from the stem on which they grew.

Flowery Orange Pekoe—The end leaf-bud, when small enough.

Orange Pekoe—The second leaf and the end leaf-bud when a little larger.

Pekoe No. 1—The next larger leaf upon the stem. If exceptionally small and "tippy" after manu-

facture, it might be graded as Orange Pekoe.

The other leaves, according to size, after having been broken or cut, produce the remainder of the gradings known to commerce. All of these varieties, from Flowery Orange Pekoe down to the lowest grading, go through the manufacturing processes *at the same time.*

All districts and estates produce the above mentioned sortations or "separations," but it by no means follows that the quality of the specified makes of the different districts, or estates of one district are equal. A Pekoe or a Souchong, grown on a first-class Assam or Darjeeling estate is quite likely to be superior in every particular to the same gradings grown on an estate of an inferior district, and is very likely to be superior to higher gradings of other districts. This is because some districts are more favored by nature in the matters of soil, climate, elevation and so on and hence produce superior teas. Cup testing, therefore, is the one and only way to determine the quality of an India, Ceylon or Java grading.

A Glimpse of Japan Gradings

It would seem as though each tea producing country were determined to have its product identified from a different viewpoint. In China the Green Teas are known by the way they are rolled, and the Black Teas by arbitrary descriptive Chinese names. In India the estate and district name is combined with an arbitrary designation of the position of the leaf on the stem. In Japan the teas are designated by the method of firing and by the sieving.

Pan Fired Teas are fired in large iron pans, over hot charcoal fires. About fifteen to eighteen pounds of raw leaf are stirred constantly in each pan by brushes or revolving blades, which drive off the moisture and bring the tea to the necessary firing point in about thirty-five minutes. The teas are then run through the various sieving machines for the purpose of taking out Nibs, Dust, Siftings, Fannings, etc. The coarser separations are usually run through a cutting machine, and all except the above mentioned by-products, again blended together.

Basket Fired Teas—Although produced in all districts, Suruga teas seem to be the most suitable, especially for stylish grades. Basket Fired teas are always fired over chareoal fires in Bamboo baskets, and handled with great care in order to preserve the full length and style of leaf. Higher grades of this kind are made from young succulent leaves, which, owing to their extreme pliancy, are easily twisted into the long, dark-olive-green wiry leaf, usually known as the "Spider-Leg." Medium grades are made from leaf of older growth, are less pliable and less tightly rolled. Lower grades are loosely rolled, and contain many large, flat, poorly made leaves of a lifeless color.

Natural Leaf may approach the pan fired type, or if made from the Basket leaf, resemble the Basket Fired style. They are usually fired in pans, the same as pan fired teas, but they often contain more coarse leaf, and are handled with a minimum loss in weight, for the purpose of producing the maximum of cup quality at the minimum of price.

Nibs—Applied to lumpy leaves, which, during process of manufacture, refuse to yield to the required twist or curl. Obtained from all kinds and grades of Japan teas, but in varying quantities. Nibs of finer grades give excellent cup results, though, owing to excess of moisture contained in the lumpy leaf, they are poorer in quality than the grade from which obtained.

Fannings, Siftings, Dust are taken by aid of sieves from all kinds and grades of Japan teas.

Fannings are the larger pieces of leaf broken from whole leaves during firing or rolling. Siftings are of medium coarseness.

Dusts are the smallest particles of broken tea leaves so obtained.

A Word About Formosa Oolongs

The Formosa Oolong is the prince of flavoring teas, the fine lines being highly fired but not burnt. They show crisp, dry, dark green leaves, and some flower, and the liquor has intense pungency and piquancy, with a most delicious flavor. In making up a blend, a trace of the finest Formosa Oolong will give nose, point and style.

The Formosa Oolongs have increased in popularity in the United States to such a degree, during the last thirty years or so, that fewer China Oolong are being imported each year. The explanation of this is the deterioration in quality of the Oolongs shipped into the United States from China. We know that Chinese manufacturers *can* produce the finest of Oolong teas, as prior to the revolution, the rare old Padræ Oolongs continued to be shipped into Russia. As the teas come into the United States today, however, the better grades of China Oolongs do not compare with similar gradings of Formosas, nor possess the pleasing and indescribable Formosa aroma and flavor.

Although in our home markets the Formosa gradings in Talk One are not in general use, the gradings —from the highest—choice to fancy grades, down to the lowest, or common cargo grades, form the basis for all transactions in Formosa. Each of these grades denote a distinct difference and have a variation of many cents per pound.

Conditions of Danish Margarin Industry

Margarin can be said to be the most important of Denmark's lesser industries, says a consular report. It is also one that suffered most in the past years. Where there are normally about 50 factories in operation, there were, in 1918, only 11 that produced 1,150,000 kilos, and toward the end of the year closed entirely for want of material. Relief from the Orient, where certain Danish interests have been developing extensive business, came finally in 1919, when one company succeeded in bringing to Copenhagen large quantities of soya beans and copra, and these oil-bearing products enabled the margarin industry to resume its work. As a result the increase in the use of margarin has continued until the consumption is now the same as before the war. Denmark uses considerable margarin to take the place of the high-grade butter exported. Some export was also possible to Germany and the Baltic countries. The total production for 1919 can be reckoned at about 35,000,000 kilos.

Government Ban on Coffee Premiums

Based upon an agreed statement of facts, the Federal Trade Commission has issued an order requiring Everybody's Mercantile Company, Sioux City, Iowa, to refrain from certain competitive methods in the sale of its coffee in interstate commerce. The facts agreed upon show that the company in marketing a certain brand of coffee, packs in each one-pound container a certificate which is redeemable in various prizes or premiums, consisting of personal property of unequal value, the amount of the prizes being determined by lot or chance and are distributed to the consumer by the retail merchant.

Profiteering in British Oils and Margarin Trade

Report of a Special Committee Made Public in England

CONSUL GENERAL ROBERT P. SKINNER, stationed at London, England. has eonveyed to the Bureau of Foreign and Domestic Commeree the following information regarding alleged profiteering in the British oils, fats and margarin trade:

A report has just been made publie by the subeommittee appointed under the profiteering aets by the Standing Committee on Trusts in regard to the existence of any trusts or eombines in the British oils, fats, and margarin trade and into the effect whieh their existence has upon priees and supplies in the Unitcd Kingdom. The subeommittee finds that, while there is no sign of any monopoly in the trade, it can not be denied that there is a remote possibility of such a eo-operation as might be undesirable in the public interest, and in order to obviate this danger a seheme has been suggested whieh appears likely to be an effective way of meeting the case, namely, that if and when there is any indieation of a monopoly in any trade or industry resulting in unfair priees, a eommittee of traders and of a certain number of Government offieials should be set up to fix a reasonable maximum remuneration to be allowed on turnover in that trade or industry. If a manufacturer or trader should make a profit in exeess of that maximum, such exeess would have to be paid over to the Government.

Raw Materials by Barter—Products

The subcommittee devoted its attention especially to the trade in British West Africa, on which country Great Britain is dependent for palm kernels, palm oil, and to some degree, groundnuts. While there are many British merehants operating in West Africa, three companies in partieular have a large share of the total business—the Nigar Co. (reecntly aequired by Lever Bros.), the African & Eastern Trade Corporation, and Jno. Holt & Co. (Liverpool). The trade is eondueted through innumerable trading stations, where manufaetured goods sueh as textiles and hardware are bartered for palm oil, palm kernels, and groundnuts brought in by the natives. Before the war the trade was rapidly being put on a eash basis, but owing to the great shortage of silver and the natives' dislike of paper money, the bartering system has again beeome prevalent in many localities.

Importing merchants usually prefer to do their business through a broker to whom they pay a certain pereentage to arrange all their transaetions. Oil seeds and nuts are sold to the crushers (most of whom have their plants in Great Britain) and the resultant oil is refined. The proeess of refining is a separate branch of business from erushing, but some firms do both, and the operations are earried on side by side. In the crushing proeess two produets, namely, the oil and residuals, emerge. The oil is refined and, after refining, is made, aeeording to eircumstances, into margarin, soap, paints, lubricants, etc., while the residuals, after going through certain proeesses of manufacture, become a valuable feeding stuff for eattle in the form of oil cake or meal.

Control of Supplies and Prices

When the war broke out priees of oilseeds, oils and fats were generally on a normal level, but in the first six weeks of the war prices in Great Britain dropped from 5 to 15 per eent, owing to the need to sell in this country materials whieh would have normally been shipped to the Continent, but about September 15, 1914, priees began to advanee. By 1917 the supply of oil seeds, oils, and fats beeame an urgent problem, and eontrol, with a system of licensing, was instituted. At that time priees had risen 60-100 per cent above the pre-war levels.

Priees were fixed at what was eonsidered a sufficiently high figure to induee importers to continue to bring in ample supplies and at the same time be commensurate with what the various branehes of the trade could reasonably afford to pay. From January, 1918, onward, at the invitation of the Ministry of Food, the business in oils and fats was eonducted for the Ministry to a large extent by the United Kingdom Oil and Oilseed Brokers' Association, ineluding the requisitioning and distribution of raw materials.

Crushers were provided with oilseeds at agreed priees, and the resultant oils were requisitioned, also at agreed priees. Similarly crude oil was supplied to refiners and the refined oil to margarin makers, whose output was requisitioned at fixed priees agreed witih the Advisory Committee and the Ministry of Food. When control was removed, in 1919, the stoeks held by the Government, whieh were not large, were disposed of at market priees. There was again a danger of short supply as eompetition from the Continent began to show itself.

Losses Now Faced by the Trade

The relative prices during control of eoeonut oil and palm-kernel oil, the two hard oils for margarin manufacture, were £70 and £52 per ton, respeetively. (At normal exchange, the pound sterling is equivalent to $4,8665.) The average price of coeonut oil in 1913 was approximately £45 per ton and that of palm-kernel oil £43 8s., net. With deeontrol in 1919, there was naturally great eompetition for the cheaper oil, with the result that, with other forees operating, priees of the cheaper oil advaneed out of proportion to the cost of produetion and the priee of the more expensive oil rose sympathetieally. During this advance the priees of oils and fats, margarin manufacturers, notwithstanding the rise, sold to a large extent on the basis of the cost of their stoeks. From the middle of 1919 to the early months of this year prices of all oilseeds and oils showed an advance of 100 per eent over priees ruling when eontrol was removed.

Sinee April, 1920, heavy losses have been ineurred by most importers, merehants, and manufacturers, who found themselves with heavy stoeks on a rapidly declining market. The trade is now in a diffieult position, and the profits made during the war and immediately after

control are being in many cases more than neutralized by present losses. The world supplies have now become adequate, and so long as a reasonable amount of tonnage is available it may be expected that prices will remain practically stable.

The oils, fats, and margarin trade is characterized by several big groups of manufacturers. The British Oil & Cake Mills, the United Premier Oil & Cake Co., Messrs. Jurgens, the Maypole Dairy Co. (through a subsidiary) are important concerns engaged in the crushing section of the industry; and Messrs. Jurgens, the Maypole Dairy Co. and Messrs. Van den Bergs are large firms operating in the margarin section. As regards importers, there are a great number of concerns, of which the African and Eastern Trade Corportion is the most powerful. In the soap-making branch are the Lever group (who are also large manufacturers of margarin) and a number of independent makers, and it is understood other firms are proceeding with the building of soap factories.

The Food Value of Apple Butter Substitutes

Comparison Made by Analyses with Real Apple Butter

IN THE October bulletin of the food department of the North Dakota Agricultural Experiment Station, Agriculture College, Fargo, N. D., W. G. Bowers contributes the following article relating to the food value of apple butter substitutes compared to that of real apple butter:

"According to U. S. standards, 'genuine apple butter is the sound product made from apple juice and clean, sound, properly matured and prepared apples, evaporated to a semi-solid mass of homogeneous consistence, with or without the addition of sugar and spices and vinegar.'

"The above definition would lead us to infer that apple butter, in order to comply to the U. S. standards, should contain at least 50 per cent total solids. Tolman, Mason and Bigelow's analysis of various samples of this product, shows total solids averaging from 40 to 60 per cent. Several samples of comparatively fresh apple butter analyzed in this laboratory showed an average of 56.8 per cent total solids. These contained on an average of 25 per cent cane sugar. In this light we feel justified in assuming as a basis of comparison, an apple butter of 50 per cent total solids, 25 per cent or half of the total solids being cane sugar.

"The average composition of apples may be taken as: Water, 83.57 per cent; total solids, 16.45 per cent; invert sugar, 7.92 per cent; sucrose, 3.99 per cent; total sugar, 11.91 per cent; total sugar after inversion, 12.12 per cent; free malic acid, 0.61 per cent; ash, 0.27 per cent. The food value of the average apple is 285 calories per pound. By evaporation and bringing the total solids from 16.43 per cent up to 25 per cent, the food value of the apple material would be increased from 285 to 434 calories per pound. The pound of sugar added (1,750 calories) would give two pounds of the solids or four pounds of the butter, 434 plus 1,750, equals 2,180 calories fuel value for the real apple butter.

"The apple butter substitutes whose food value we wish to compare to the above standard were prepared by J. S. Ziegler, Chicago, laboratory No. 13987, and the Federal Pure Food Company, Chicago, laboratory No. 14608, respectively.

The Chemical Analyses

"In the following tables are given: the chemical components of these materials, the estimated amounts in ounces in a four and six-ounce can respectively, and also the fuel value of each product summed up at the bottom of the tables.

Wonder Butter

Lab. No. 13987

Compound	Per Cent	Ounces in can	Fuel Value
Water	9.15		
Ash	3.15		
Protein	5.80	0.232	
Cane sugar	2.30	0.092	
Dextrose	0.70	0.028	
Dextrin	1.10	0.052	
Vegetable gums (Pectous material)	1.40	0 048	
Corn starch	62.20	2.608	
Acid (estimated as citric)	5.75	0.230	
Acid (malic)	0.00		
Total oil	1.52	0.061	
Apple oil	0.02		
Waxes, etc.	3.20	0.092	
This analysis would indicate a mixture of:			
Corn starch	50.00	2.00	204.005
Corn meal	40.00	1.60	165.502
Acid, spices, pectous material, etc.	10.00	0.40	41.50 (assumed)
Total		4.00	410.00

Cero Butter

Lab. No. 14608

Water	8.40		
Ash	2.50		
Protein	3.30	0.198	
Cane sugar	2.80	0.168	
Dextrose	0.80	0.048	
Dextrin	0.10	0.006	
Vegetable gum and pectous material	1.53	0.092	
Corn starch	69.20	4.152	
Acid (estimated as citric)	5.60	0.336	
Acid (malic)	0.00		
Total oils	1.52	0.091	
Apple oil	0.02		
Waxes, etc.	3.00	0.180	
This analysis would indicate a mixture of:			
Corn starch	60.00	3.60	366.305
Corn meal	30.00	1.80	186.302
Acids, spices, pectous material..	10.00	0.60	062.10 (assumed)
Total fuel value		6.00	614.70

Determination of Pectins a Problem

"Most items of the analyses were carried out according to the most commonly adopted and well.known methods. The determination of the pectins resolved itself into a problem. The presence of some dextrin and a large amount of starch prevented our making use of the Magoon and Caldwell[7] method. A combination of T. VanDerLinden[8] and Charles H. Hunt[9] methods seemed to give best results. Cold water, and the acids already present, served as a solvent, and ammonium sulfate was used as a precipitant.

"In the total oils (1.52%) there are the possibilities of corn oil, ginger oil, fruit oils other than apple oil, and apple oil. We determined separately none of these excepting the apple oil. The determination of the rest of them would involve constants that could not be obtained satisfactorily with such a small amount of total oils, and as far as food value is concerned it would make no difference. We arrived at our estimate of the apple oil by the application of the method by which Leach determines artificial apple oil.[10] The oils are both esters of the same formula, the only difference being in the structure. However, this is not the fact upon which we based our belief that we obtained a true value for the amount of apple oil, it is the fact that they are both

esters and the other possible oils present are not.

"Since these matters are of minor importance in our present proposition, we will leave them for future consideration. Since the food values of the above described packages are the same, we shall make one comparison of this food value with that of real apple butter. Six ounces or the entire contents of the Federal Food product, together with about one pound of cane sugar (the same proportion as in the real apple butter), are used to make two quarts of butter, this means 615 calories plus 1,750 calories (the value of one-half pound of white sugar plus the value of one-half pound of brown sugar), which makes a total of 2,365 calories for the four pounds of substitute butter. The real butter has, according to our assumed values above 2,180 calories.

Costs and Food Values

"This six-ounce package costs 25 cents, the pound of sugar to go with it 11 cents (equals 36 cents). The cost of the substitute butter would be 9 cents per pound plus the fuel and the work necessary to carry out the directions for making it. Genuine apple butter costs 34 cents per pound on the market at the date of this writing. We would consider it unfair, however, to compare the nine to the thirty-four as relative costs of the substitutes and the real apple butter, for in the real butter we get the finished product and in the substitutes we do not. The raw materials for a pound of real apple butter would cost 11 cents at the present market price. So it appears like a ratio of 9 to 11 for the relative costs of the substitutes and the real products. This ratio holds good for the Federal Food products. The Ziegle product which is no better, costs 30 cents for four ounces. This would be 45 cents for six ounces of this material. Eleven cents for a pound of sugar to make four pounds of this substitute would equal 56 cents for the four pounds of butter, or 14 cents for one pound. The ratio in this case would be 14 to 11 for the relative costs of the substitute and the real butter.

"We feel that the reason for such a variation in the cost of the substitutes lies in the fact that the public lacks information regarding their chemical composition. The substitute costs at the rate of ½ cent for the corn starch, ½ cent for the corn meal, a trifle over ½ cent for the acid,[6] less than ½ cent for the spices, not over ½ cent for the pectin; or about 2½ cents for the material in the pasteboard box for one pound of butter. We see here 150 per cent cost over that of the original constituents for the one brand, and 350 per cent for the other brand of these substitute materials.

"In conclusion we would suggest that the public runs a risk in choosing the substitute (with its apparently greater food value), at 9 cents per pound in preference to the real at 11 cents per pound, even in the face of the opportunity to reduce the nine to four and one-half or five cents. We must bear in mind that the human system has been accustomed to a diet in which there is a portion of the natural fruit products with their natural fruit sugars, and, that there is danger of overtaxing the starch digesting capabilities. We should all at least recognize that apparent danger until we arrive at a more definite solution of the problem."

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Heat Penetration in Processing Canned Foods

THERE has just been issued by the Research Laboratory of the National Canners' Association a bulletin entitled "Heat Penetration in Processing Canned Foods." It is by Dr. W. D. Bigelow, in collaboration with G. S. Bohart, A. C. Richardson, and C. O. Hall. It is known as Bulletin No. 16-L, consisting of one hundred and twenty-eight pages, with several dozen illustrations, mainly charts showing the progress or rate of heat penetration in different kinds of fruits, vegetables, fish, also milk, in cans of different sizes.

Chapters are devoted to: "Development of heat penetration studies," "Apparatus and method," "Experimental rotating cooker," "Methods of heat penetration," "Minimum heat penetration," "Form of typical heat penetration curves," "Size of cans influence temperature," "Retort temperature," "Influence of cooling operation on sterilization," "Processing in dry steam and under water," "Temperature of the different parts of the retort," "Lack of uniformity in individual products," "Influence of rotation," "Calculation of theoretical heat penetration curves," "Interpretation of heat penetration curves in terms of process time."

From the introduction we quote:

"As soon as possible after a can of food is sealed it is placed in a sterilizer and heated by means of steam or hot water. Heat enters the can from all sides and the coldest portion will always be at the center. The temperature at the center of the can, therefore, must be the basis of any study of processing.

"In all sterilizing operations time is an essential element. Sterilization is not necessarily complete if the center of the can is brought to a certain temperature, and there is no definite temperature that can be termed the sterilizing point. All bacteria will die if subjected long enough to temperatures too high for them to grow. As the temperature increases, however, the bacteria are killed in less time. For example, some extremely resistant organisms require one hundred times as long for their destruction at the temperature of boiling water as they do at 250° F. It follows, therefore, that a can of food may be sterilized by a quick cook at a high temperature, or by a protracted cook at a lower temperature.

"In order to determine the most satisfactory processes for the different foods, it is necessary first to discover the temperature at the center of the can during the entire course of the operation known as processing, then to ascertain the time that is necessary to destroy the spores of the most resistant organisms, at various temperatures and in different foods.

"This bulletin presents the results of work thus far conducted in the study of heat penetration. Subsequent bulletins will give the thermal death points of the most resistant bacteria, and the length in time necessary to destroy them at a given

temperature in various foods. This information will be published during the next few months, if possible. The data in this bulletin will then be correlated with the results of the study of bacteria, and the combined results of both investigations will be interpreted in terms of retort management." * * *

Influence of Size of Can on Heat Penetration

"Everyone knows that large cans require longer to heat to the center than small cans. This is due partly to the greater distance between the center and the surface, and partly to the fact that large cans have less surface than small ones in proportion to the amount of contents.

"A general rule may be applied to the heating of cans whose length is greater than their diameter. The time necessary for heat to penetrate to the center of cans of different size is approximately proportional to the squares of the radii of the cans. It should be understood that this refers only to the time necessary to bring the center of the cans to specified temperatures. It does not refer to the length of process necessary to insure sterilization. This is further discussed on page 37.

Influence of Initial Temperature on Heat Penetration

"If two cans of the same size and containing the same substance are heated to different temperatures and then placed in a retort and processed together, the can with the lower initial temperature will heat faster than the other, so that the centers of the two cans will reach retort temperature at the same time. Let us suppose that the retort temperature is 250°, that the contents of one can have been heated to 200° and the other to 150°. If these cans are heated together in a 250° retort the first one will be heated through 50° and the other through 100° in the same length of time. The former will therefore be heated half as rapidly as the latter. At every moment while the cans are being heated, the temperature of the former will be midway between the retort temperature and the temperature of the latter. The two cans reach retort temperature at the same time, yet during the heating period the can with the higher initial temperature is always the hotter.

"With products such as peas, where heat passes quickly to the center of the can, this makes little difference in the sterilizing value of the process. Other products, such as corn, have exceedingly slow heat penetration, and do not reach retort temperature during the entire process. In such cases, the initial temperature is an immense factor in the sterilizing value of the process. For example, if a No. 2 can of corn with an initial temperature of 180° must be processed for 78 minutes to destroy the spores of a certain organism, a process of 83 minutes is necessary to kill the same organism with an initial temperature of 160°. The temperature finally secured at the center of the can is not the first consideration; the time during which the can is at a high temperature is what makes the process effective. If corn is filled into the can at 195° or 200° and sealed and processed quickly, the process will be correspondingly effective. It is evident, therefore, that the can should be processed as quickly as possible after they are filled and sealed. In case of a breakdown that will cause more than momentary stoppage, the partly filled crate should be placed in the retort and processed immediately. If the cans are allowed to stand until the contents are cooled appreciably, the sterilizing value of the process is materially reduced.

Influence of Retort Temperature on Heat Penetration

"If two cans of the same size are filled with the same product at the same temperature and processed in separate retorts at different temperatures, the centers of the two cans will reach the temperatures of their respective retorts at the same time. Thus, the can processed at the higher temperature will heat more rapidly than the other. The same relation exists here as in cans taken at different initial temperatures and processed together in the same retort.

Influence of Cooling Operation on Sterilizing Value of Process

"Since sterilization is caused by heat and the length of heating is an important factor, it follows that rapid cooling reduces the sterilizing value of any particular process. Cooling in the industry is rarely uniform. It depends on the number of cans processed at one time and on the amount of water run through the cooling tank. Both of these conditions are likely to vary.

"In air cooling, cans which are well ventilated cool much more rapidly than those which are boxed up while hot or left in a large pile. When cans are allowed to cool in a crate, the cans at the bottom of the crate cool first, and a considerably longer time is necessary to cool the upper tier.

"Variations in cooling are so great that it is best, when deciding on the length of a process, to assume that the cans will be cooled as rapidly as possible. It is not safe to shorten the cook and count on cooling slowly enough to maintain a high temperature and insure sterilization. When this is done an occasional crate of cans may be cooled more rapidly than the others, and the process be insufficient.

Influence of Consistency on Heat Penetration

"Heat penetration is most rapid in products that consist of or are surrounded by water, or a thin syrup or brine. The addition of products that form true solutions, such as sugar and salt, in concentrations used in canned fruits and vegetables does not greatly retard heat penetration. Products such as peas, which consist of small round particles that are not cooked to pieces, permit the movement of heat by means of convection currents almost as quickly as water.

"Products that soften when heated so that they pack together, and products that are cooked to pieces during the process, make the solution somewhat viscous and retard heat penetration. If the pieces of insoluble material are somewhat larger, like beets and large plums, they delay the heating of the liquor, which does not reach retort temperature until the pieces are heated to the center.

"Products like spinach pack together closely when the can is well filled, and interfere with the movement of convection currents. Increasing the fill of spinach greatly delays heat penetration and calls for an increase of process.

"By reference to Figure 11 it is seen that an increase of the amount of starch in solution retards heat penetration until a solution of about 6 per cent is secured. Beyond that, increasing the amount of starch does not materially influence heat penetration.

"The consistency of starchy products that have no free liquor does not greatly influence heat penetration. Corn of a very heavy body heats to the center of the can as quickly as corn of medium consistency. If the corn were very sloppy, the heat penetration would be somewhat more rapid, but it is not affected by variations within the limits of good commercial practice.

"The same is true with such products as pumpkin, squash and tomato

pulp, which are broken up by means of steam and by mechanical appliances so that the insoluble matter is very finely divided. These products act to some extent like starch, and their consistency does not greatly influence heat penetration.

Influence of Rotation on Heat Penetration

"Agitating cookers, in which cans are rotated on their own axes, are now largely used in the industry for processing some products. With some products they greatly increase heat penetration; with others they do not. Products that consist of a clear liquor and solids whose interstices are filled with such a liquor, heat rapidly to the center of the can by reason of the free movement of convection currents. Where the insoluble matter is in relatively small particles, as in the case of peas, heat penetration is not greatly increased by the use of a rotating cooker. Such products as whole grain corn behave very much like peas. Here the free movement of convection currents is prevented by the viscous nature of the corn, but the grains of corn are of small size and do not greatly assist in mixing when the can is rotated. The development of a continuous agitating cooker that would work under pressure would therefore be of little value in shortening the process of such products as peas and whole grain corn. Its value with such products would be limited chiefly to the elimination of labor in handling the cans.

"With tomatoes the case is widely different. The tomatoes act as baffle plates and greatly assist in the mixing of the contents when the can is rotated even at a very slow rate of speed. With spinach the same is true. Spinach appears to sling together in such a way as to act as baffle plates like tomatoes and thus assist in mixing. Some preliminary work has been done on peaches cut in halves, and it was found that rotation even at a low rate of speed mixes the contents and hence increases heat penetration to a considerable extent.

Influence of Heat Penetration on Sterilization of Canned Foods

"Bacteria are not necessarily destroyed by heating a can to a specified temperature. We must also know how long that temperature was maintained. In the case of products that heat slowly the temperature of the center of the can during the entire processing period must be known. The information thus secured is being co-ordinated with the results of investigations of the time necessary at various temperatures to kill resistant bacteria, and also with the acidity of various kinds of food. Data on these subjects are being accumulated rapidly but it will be some time before a comprehensive statement can be made."

Market for Fruit Preserves in Argentina and Uraguay

TRADE Commissioner George S. Brady, Buenos Aires, Argentina, sends the following report to the Bureau of Foreign and Domestic Commerce, Washington, relative to the market for imported preserves in those countries:

"There is a limited market at the present time in Argentina for imported preserves, and this market is steadily decreasing on account of the increase in the local manufacture of preserved and canned fruits, as well as on account of the high protective tariff. The local glass factories are now becoming better able to supply the glass jars for the canneries, thereby constituting another reason why imported preserves put up in this way are less in demand.

Imports of Fruit Preserves Into Argentina

"The following table shows the imports in metric tons of fruit preserves into Argentina from the principal exporting countries (import duty on fruit jams and jellies is $0.15 per pound; that on fruits canned in juice is $0.10 per pound):

Country	1913 Metric Tons	1916 Metric Tons	1919 Metric Tons
United States..	455	61	200
France	499	55	9
Great Britain..	367	30	19
Spain	144	56	112
Italy	892	46	14

"Prior to the war a large part of this trade with Spain and Italy was in fruits preserved in alcoholic liquors, but the importations of this class of preserves is now confined to Italian goods and the entire importations of preserves from Italy in 1919 were for fruits put up in alcohol.

Labeling Preserves for Sale in Argentina

"A municipal ordinance in Buenos Aires requires that all food products for sale in the city must bear a label in Spanish giving the name of the product and the names of the ingredients. It is not necessary, however, to state the quantity of each ingredient. In addition, the label must contain the name of the agent or importer in Buenos Aires. The law also provides that no coloring matter or preservatives may be used, but this regulation is being actively protested and is likely to be modified to allow the use of vegetable coloring matter. It is advisable that all American canned goods intended for Argentina or Uruguay comply with these label requirements.

"There will undoubtedly always remain a limited market for imported fruit preserves in Argentina to suit individual tastes or for sale to foreigners, but the plentiful supply of all kinds of fresh fruits in the country is causing great numbers of canning and preserving factories to spring up. At the present time most of these are small and crude establishments but with a good product. There are, however, several factories with large output of high-class preserves, well put up in tins and glass jars. Two of the most important of these factories are English owned and one is American. No official figures are available on the native production of fruit preserves and the various estimates are unreliable, but it is safe to assume that the per capita consumption of fruit preserves and "dulces" (sweets) in Argentina is very large. One of the local factories will turn out this year 750,000 cans of preserves. Some of the Argentine fruit-preserve manufacturers claim that Argentina will soon be in a position to export conserved fruits to the United States. Such exportation,

UNIFORMITY

Uniformity was the principal theme of the Convention of the National and State Dairy Food and Drug officials held at St. Louis last month. These discussions were divided into two classes: (1) UNIFORMITY OF LEGISLATION; (2) UNIFORMITY OF ADMINISTRATION.

President Frary, in his opening adress, recommended that a committee of the Association be formed to meet with committees from trade associations or manufacturers to discuss points involved in the administration and enforcement of the food and drug laws.

There is no question but what work along this line will be productive of good results. It does not necessarily mean that the state laws should be held subservient to the National Law. Perhaps the National Law or the regulations under it could be amended to advantage and if one of the state laws or the regulations promulgated thereunder contain good points the other states should take recognition of and adopt such points, if possible.

It was also stated at this Convention by one of the delegates, who had long been in the work and a very active member, that real adulteration and misbranding is a thing of the past. This being so, uniformity of legislation and administration in food laws, both Federal and State, becomes very important, because it will tend to a smoother working of the food laws from the purely technical side.

Armour and Company heartily welcomes this move on the part of the food officials and assures them that it will be only too glad to co-operate with them in every way, either by appointing a representative to meet with their committees to discuss questions arising under the enforcement of the laws, or otherwise.

ARMOUR AND COMPANY

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however, will largely depend upon the installation of more modern factories. Knowing the popularity of certain names and brands in foreign preserves some of the local factories have made their labels in imitation of imported goods. The term 'California' has been applied to three distinct sections of the Argentine by enthusiastic fruit growers, and the name is frequently used on locally canned preserves.

Quince Preserve Most Popular Other Preserves Used

preserve in Argentina and in Uruguay is a solid paste of quince jelly, put up usually in tins, and known under the name of dulce de membrillo (quince sweet). Other fruits are also put up in this form, but quince is the most popular. It is served with cheese at tea or as a dessert. Both in Argentina and in Uruguay it is known as a national dessert. This class of preserve was formerly imported from Spain and Italy but is now almost entirely made in this country.

"While the consumption of fresh oranges in season is very great in both Argentina and in Uruguay the native taste has not been trained to sweets made from oranges and grapefruits and the consumption of marmalades is largely confined to the English and Americans in the country. One of the local factories puts up a good quality of orange marmalade in 1-pound tins. In the Mendoza district some fruit jams are made with honey but the market for this class of preserve is limited as it has a peculiar flavor. Two other native-made preserves, with larger sales, are made from sweet potatoes and from tomatoes.

Retail Prices of Argentine Preserves

"The following list of retail prices of Argentine-packed fruit preserves is made up from the August, 1920, retail price lists of two of the most popular Buenos Aires retail stores and gives an indication of the local price competition with which imported American goods will have to contend. Prices are given in United States currency. [In comparing these prices with retail prices in the United States allowance must be made for the difference in retail profits. Ordinary retail-sales profits in Argentina usually run from 60 to over 100 per cent of the wholesale price of the article.]

Preserve	Weight	Price
Apricot jam, 1-pound glass jar (Anglo-Argentine)		$0.71
Apricot jam, 2-pound glass jar (Anglo-Argentine)		1.26
Peach jam, 1-pound glass jar (Anglo-Argentine)		.63
Fig jam, 1-pound glass jar (Anglo-Argentine)		.63
Apple jam, 1-pound glass jar (Anglo-Argentine)		.59
Orange marmalade, 1-pound glass jar (Anglo-Argentine)		.50
Canned peaches, 30-ounce can (Argentine)		53
Canned plums, 30-ounce can (Argentine)		.48
Canned pears, 30-ounce can (American-Argentine)		.82
Dulce de membrillo (quince sweet), 1-kilo (2.2-pound) can		.55
Dulce de membrillo (quince sweet), 5 kilo (11-pound) can		2.35

"There is no standard can or jar for fruit preserves in Argentina, though metric even units of weight are being adopted by the native canneries."

Increased fire insurance losses for the first six months of this year, amounting to $20,000,000 more than in the same period last year, are attributed to high values, rather than to an increase in the moral hazard incident to a slackening of business. The losses for the first six months stand at $164,000,000, as against $131,000,000 for the first six months of 1919.

Optimist Is Needed Today

By VICTOR MURDOCK
Chairman, Federal Trade Commission, Washington*

THE key to continued prosperity in Amcrica is in the keeping of the American business man. The key is optimism. Optimism, in turn, is that fine quality of balanced judgment which functions on a declining market as readily as on a rising market. When the sun is shining it does not fail to remember the rainy day that is to come, and when the rainy day has come, it does not despair of the sun.

There are tens of thousands of optimists in the business life of America and they are the balance-wheel of American progress. Their task is even greater than that, for in the world field they can serve to give an equilibrium to all trade.

For the optimist today is confronted with a world-wide problem in the form of huge national debts, inflation, disturbed exchange and price adjustments.

The optimist remains an optimist because he realizes that there are certain fundamental factors in trade which endure through all changes. The relation of supply and demand changes, but the economic law which governs them does not change. The relation of vendor to purchaser varies, but the economic principles which move both are without variation. The conditions of credit are altered from time to time, but the law of loan and payment remains the same.

Fundamentals Do Not Change

It does not follow and it will never follow that these fundamentals can be discarded because modern commerce is complex. Complexity may obscure them. It can not change them.

Neither can the complexity of modern commerce change the ethical relation of the merchant to his customer. It is primarily a relation of service. The merchant, among other things, exchanges a ware for money. If he did that only, he would not be a merchant. He does the other things which make him a merchant. He adds to the ware the guarantee of quality and service. When he does so, the transaction is no longer barter; it is the highest form of business. For the modern business man is not exchanging wares for money. He is trading quality and service for good will and ware and coin are only vehicles for a fine relation between fellow-men, which is at the bottom of confidence and the security of society in general.

The law of our forefathers held that there was no fiduciary relation between vendor and vendee. That may have been true of barter. It is not true of modern trade. There is today between vendor and vendee a relation of trust, a mutual obligation which serves both, and what is of more importance, stabilizes the whole community. For out of that relation is born confidence, upon which the whole social transaction proceds and without which it must necessarily halt.

Service Decrees Success or Failure

With the ware which leaves his place, goes not only the merchant's guarantee of quality, but his good name, and his good will to serve. The ware is the vehicle which carries this purpose. Mere traffic in price alone can not carry it.

The highest expression of modern business then is service. Service is as fundamental an economic law as supply and demand. It is as elemental in a falling as in a rising market. It is as needful in a day of over-demand as in a day of over-supply. Its presence or absence decrees permanent success or ultimate failure. It equalizes the heights of good times and the depths of hard times. For in the day of trial, that which is not serviceable in trade must be inevitably weeded out, and that which is serviceable must survive. Service does survive because it thrives only through an exercise of these factors which have built up our civilization. First and foremost among those factors is inviolability of contract. A verbal pledge should remain a bond. The man who misrepresents in trade, in label, in advertisement, or in sale, has no place in this situation. The man who cripples his competitors by unfair methods, is blocking the path of progress not blazing it. And the men who are not moved by the impulse to serve the community, are sapping the foundations of confidence upon which their own and all other business rests.

The man who quickly overreached in the day of high prices is likely to prove the most destructive factor when the market price has turned. The profiteer of one market is apt to become the prophet of evil of the other market. He can not help. He can only hurt.

On the other hand, the man who did not run away with a runaway market, will meet a falling market without gloom. He will not haunt the barometer to forecast storms which may never come. He will build up, not tear down, confidence. His optimism will win for him, for trade, for America, and in a troubled time, for all nations which, more and more look to America, as the world's pre-eminent point of stability.

*An address delivered to the American Specialty Manufacturers' Association at its convention at Atlantic City, November 17, 18 and 19.

A RESEARCH INFORMATION BUREAU

The National Research Council has established a Research Information Service as a general clearing house and informational bureau for scientific and industrial research. This service on request supplies information concerning research problems, progress, laboratories, equipment, methods, publications, personnel, funds, etc.

Ordinarily inquiries are answered without charge. When this is impossible because of unusual difficulty in securing information, the inquirer is notified and supplied with an estimate of cost.

Much of the information assembled by this bureau is published promptly in the "Bulletin" or the "Reprint and Circular Series" of the National Research Council, but the purpose is to maintain complete up-to-date files in the general office of the Council.

Requests for information should be addressed Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Important Announcement
to the Readers of
The American Food Journal

ON JANUARY 1st the subscription price of The American Food Journal is to be advanced from $2.50 to $3.00 per year.

Plans are under way whereby the scope of the publication will be broadened to embrace the interests of all those concerned with the scientific and practical problems of food manufacture and distribution. In addition we shall continue to serve with ever-increasing fidelity the interests of food officials, domestic science experts and others who are concerned with the various phases of scientific food subjects.

The slight increase in the subscription rate, however, is made primarily to offset the tremendous increase during the past year in printing and other production costs. Many publishers, long before this, have found it necessary to increase their rates, and we are confident that our friends will appreciate our position.

With important editorial plans under way, we are able to assure our readers that they will receive a publication each month that will truly justify the term, "The National Magazine of the Food Trades." No effort will be spared to fulfill the expectations of the most exacting.

SPECIAL OFFER

Before the new rate goes into effect, however, we want to give opportunity to our present readers, whether regular subscribers or not, to take advantage of the present low rate.

For a limited period, therefore, we will accept subscriptions at $2.50 for one year or $5.00 for two years. In the case of present subscribers, their present subscriptions will be extended from the date of expiration for the desired period, but in no event for more than two years at the old rate. (To those who are not subscribers we offer a Special Trial Subscription of six months for One Dollar.)

A blank form is presented below for your convenience in taking advantage of this offer. Simply check the square opposite the arrangement you perfer, and mail to this office. It will save money for you and insure your getting The American Food Journal regularly.

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Packers Plan for Co-operation with Retailers

THE Institute of American Meat Packers, through its committee to confer with retail dealers and trade associations, is planning to establish a system of co-operation with the United Master Butchers' Association and other retailers' organizations, as well as with individual retailers everywhere. This plan includes features of a most practical character, including the settlement of local grievances and difficulties by local committees of packers and retailers, and general co-operation from headquarters as well. Beyond this comes the greater and even more important task of educating the consumer, a task in which the retailer is showing the greatest desire to take part.

A retailers' service division, as proposed by the packers, would embrace the following among its duties:

To keep in as close touch as possible with the affairs and the officers of butchers' and grocers' retail organizations throughout the country.

To attend their conventions and address such conventions whenever practicable.

To make a careful study of retail conditions, management, delivery systems and accounting.

To issue from time to time bulletins to the secretaries of the retail associations, to retail publications.

To make a study of the State and municipal laws governing the retailing of packing house products with a view of obtaining standardization of such laws.

To issue bulletins on the poor products, particularly from the standmethod of handling packing house point of conservation.

The retailers have pointed out several advantages that will accrue to them in such an organization, and have shown that great benefits would be obtained if such a body might take their complaints against the packers, such, for instance, as retail selling and selling to restaurants and hotels by the wholesaler, practices to which the retailer is vigorously opposed.

Both the packers and the retailers feel that they would be benefited by an advertising campaign of an educational nature. This campaign they feel would be especially valuable in educating the public with regard to the value of the cheaper cuts of meat.

The Institute of Independent Margarin Manufacturers, Munsey Building, Washington, announces that its second annual convention will be held in the Hotel Traymore, Atlantic City, N. J., Thursday and Friday, June 30 and July 1, 1921. J. S. Abbott is secretary.

Chocolate Pudding in Tins a New Food Product

Eustin Pennock & Company, Boston, have placed on the market a new food product called "Pennock's Chocolate Pudding." By the addition of sugar and water the preparation may be used, not only for chocolate pudding, but for chocolate pie, fillings for eclairs, layer cakes, etc.

Albany, N. Y., was selected for the try-out advertising and marketing campaign. Out of 200 desirable retail stores, 167 consented to put in a stock of the new product upon being shown proofs of advertisements and copies of contracts made with Albany newspapers for advertising space.

The advertising campaign was started in conjunction with window displays and special demonstrations in a number of stores. The largest grocery store in that city was selected for a special demonstration in which a chef was employed to make puddings, chocolate eclairs, etc., before the eyes of customers.

Eustin Pennock & Company will distribute their product in other cities along similar lines. Distribution is being arranged through brokers, who sell the retailers in their cities before a local advertising campaign is begun.

The advertising campaign has been placed in charge of the Tucker Agency, 303 Fifth Avenue, New York.

Exports of Breadstuffs, Oils, Etc., During September

The following statement of exports of domestic breadstuffs, cottonseed oil, meat and dairy products, cotton and mineral oils, from the United States for September and the nine months ended September was today completed by the Bureau of Foreign and Domestic Commerce, Department of Commerce:

Groups and Principal Articles		September 1920	September 1919	Nine Months Ended September 1920	Nine Months Ended September 1919
Exports by Groups					
Breadstuffs	Dollars	114,604,731	87,010,415	749,453,275	725,109,947
Cottonseed oil	Pounds	4,894,967	5,497,160	113,011,304	160,544,200
	Dollars	832,917	1,385,298	25,444,567	33,572,864
Meat & dairy products	Dollars	32,174,599	61,316,940	414,579,369	966,346,925
Cotton	Bales	228,068	236,694	4,103,506	4,403,362
	Pounds	119,131,556	119,091,600	2,101,819,365	2,256,860,567
	Dollars	41,441,664	39,701,402	861,643,353	714,680,835
Mineral oils	Gallons	221,938,669	201,345,527	2,244,559,132	1,718,773,391
	Dollars	40,268,885	28,556,477	387,747,335	243,169,440
Exports by Principal Articles					
Barley	Bushels	2,066,372	4,497,392	11,196,518	33,211,206
	Dollars	3,462,595	6,972,518	18,261,856	47,016,010
Corn	Bushels	1,034,626	1,299,561	11,565,703	7,836,593
	Dollars	1,599,007	2,151,991	19,034,399	13,507,039
Oats	Bushels	874,590	5,267,200	11,491,540	45,137,501
	Dollars	754,164	4,504,658	11,274,521	37,828,126
Rye	Bushels	2,464,422	1,142,812	43,945,528	27,929,812
	Dollars	5,782,284	1,897,254	94,961,274	53,691,055
Wheat	Bushels	30,770,796	17,089,923	130,545,837	109,763,922
	Dollars	89,351,745	41,072,296	368,234,977	264,981,400
Flour	Barrels	938,350	1,764,283	16,194,698	21,676,527
	Dollars	11,487,436	19,431,566	183,038,004	241,120,274
Beef, canned	Pounds	244,261	1,152,616	23,314,912	48,794,233
	Dollars	84,850	412,372	5,692,708	18,877,857
Beef, fresh	Pounds	1,964,543	7,249,366	84,489,590	121,543,894
	Dollars	322,524	1,594,266	16,795,585	28,561,714
Beef, pickled, etc	Pounds	1,613,657	3,472,021	19,140,803	33,089,581
	Dollars	205,187	660,683	2,772,225	6,812,908
Oleo oil	Pounds	5,819,421	6,730,818	49,271,177	55,669,419
	Dollars	1,039,912	2,036,451	11,954,283	16,181,871
Bacon	Pounds	41,371,561	57,209,378	460,161,522	1,009,564,046
	Dollars	9,792,155	19,075,850	115,089,503	320,877,174
Hams and Shoulders	Pounds	8,997,124	18,209,239	150,769,259	551,176,109
	Dollars	2,535,304	6,084,582	41,147,640	175,877,452
Lard	Pounds	46,326,353	36,960,364	410,679 571	614,133,032
	Dollars	10,020,968	12,962,297	98,748,842	192,993,403
Neutral lard	Pounds	1,871,769	1,446,053	19,265,313	20,158,530
	Dollars	425,750	502,183	4,846,843	6,735,581
Pork, pickled	Pounds	3,279,902	2,762,435	29,969,552	21,249,494
	Dollars	615,748	749,148	6,182,496	5,532,493
Lard compounds	Pounds	1,564,875	5,185,929	21,927,223	116,546,632
	Dollars	323,270	1,522,471	5,346,446	29,306,034
Milk, condensed, etc	Pounds	21,364,536	62,558,786	356,634,949	617,002,286
	Dollars	3,973,556	8,797,535	55,578,420	87,350,118
Crude mineral oil	Gallons	30,930,411	32,734,853	251,426,183	110,348,099
	Dollars	2,792,519	2,158,897	20,977,617	6,920,218
Illuminating oil	Gallons	62,680,807	75,616,233	619,198,526	723,307,143
	Dollars	9.253,541	9,953,577	94,409,513	85,223,277
Lubricating oil	Gallons	28,454,243	19,696,882	296,220.859	199,880,934
	Dollars	11,787,544	5,728,466	107,998,863	62,427,630
Gasoline, naphtha, etc.	Gallons	39,969,725	34,670,936	470,774,375	271,529,174
	Dollars	11,688.143	8,808,004	125,754,814	67,088,267
Residuum, fuel oil, etc.	Gallons	59,903,483	38,626,623	606,939,189	413,708,041
	Dollars	4,747,138	1,907,533	38,606,528	21,510,048

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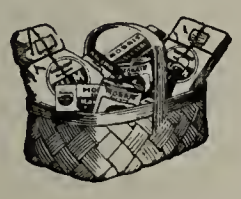
It's delicious for eating and for cooking—Morris Supreme Marigold Oleomargarine.

Try it spread thick on bread; there's nothing more pure, wholesome and economical.

Request the brand packed under the yellow and black label.



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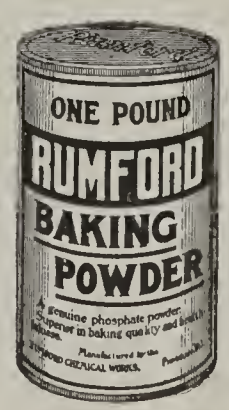

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Hinde & Dauch Paper Co. To Increase Output

The Hinde & Dauch Paper Company, of Sandusky, Ohio, has purchased the large paper mill hitherto owned and operated by the Brown Paper Company, at Fort Madison, Ia. The conclusion of this deal is a step in preparation for increasing the output of the Hinde & Dauch Paper Company approximately 25 per cent. The company has factories at Delphos, Muncie, Ind., Cleveland, Watertown, N. Y., Toronto, Gloucester City, N. J., as well as three factories at Sandusky.

The location acquired with the news plant covers ten and one-half city blocks adjoining both the Burlington and Santa Fe railroads, the two transcontinental systems which cross the Mississippi river at Fort Madison. There is also a river frontage with riparian lights and dockage facilities which, together with the railroad connections, afford the company transportation and service of the most complete description.

The capacity of the new mill, together with the additional machinery, will enable the daily output of seventy-five tons to be maintained. It is planned eventually, officials state, to erect another corrugated box factory on the company's property adjoining the mill, and thus to afford a more prompt and satisfactory service to the growing western and middle-western trade of the concern.

For a long time the business of the Hinde & Dauch Paper Company has been limited only by its mill capacity and transportation facilities.

Coffee Committee Conducting Scientific Investigation

The Joint Coffee Trade Publicity Committee, 74 Wall Street, New York, which recently began a national advertising campaign to educate the public in the use of coffee, has now entered upon another stage of its campaign, namely a movement to educate the consumer to make better coffee. Advertising copy is now being run in newspapers in 117 cities and in a number of national magazines. Another feature of the campaign is a scientific research which is being conducted at the Massachusetts Institute of Technology by Prof. S. C. Prescott. The purpose of this research, according to Prof. Prescott, is "the careful determination and correlation of the chemical substances which are normally found in the coffee bean in the raw state, and after various degrees of roasting, and the discovery, if possible, of the exact way in which each one of these ingredients reacts in the manufacture or preparation of the coffee beverage."

ANNOUNCEMENT

THE AMERICAN FOOD JOURNAL had hoped to avoid the necessity of increasing its subscription price, but constantly rising costs of publishing, together with the present plans of the publishers to improve the quality of the magazine in many respects, have made it seem that a slight increase is advisable.

This increase is only 50 cents a year, but in order that all present subscribers to the paper and others who may wish to subscribe shall have full opportunity to take advantage of the old price, we will accept subscriptions for a limited time at $2.50 a year, payable in advance, for not more than two years. That is, you may send us $5.00 to cover a two years' subscription, or $2.50 for a one year's subscription and same will be credited to your account so that you will receive the paper for one or two years, as you may elect, from the expiration date of your present subscription.

This offer applies also to new subscribers. Send in your subscription at once. If you are not a subscriber and wish to subscribe for a trial period only, we will send you the paper for six months for $1.00.

These offers are subject to withdrawal at any time, and we, therefore, suggest that you send your subscription at once.

THE AMERICAN FOOD JOURNAL.

Seeks to Stop Sale of Spoiled Foodstuffs

The Pennsylvania Department of Agriculture is endeavoring to interest officials of the United States Army and Navy in preventing the sale, to the public of Pennsylvania, of foodstuffs unfit for human consumption. Under an opinion from the attorney general's department, the Bureau of Foods, Pennsylvania Department of Agriculture, cannot prevent the Army and Navy from disposing of these spoiled stores, when they are sold as being unfit for food.

The Bureau, however, can prosecute wholesalers or retailers who offer the goods for sale and this has already been done in the case of a number of Philadelphia dealers who offered for sale candy that was rancid and wormy.

The Government holds large stores of candy and other stuffs at Gary's Ferry and other points in Pennsylvania. This stuff has been held so long that much of it is unfit for food. The Government, in selling it, has plainly marked it as being unfit for human food, yet some have purchased and offered it to the public as being fit for food.

The co-operation of the Army and Navy has been sought by Director Foust of the Bureau of Foods and an effort will be made to effectually prevent this stuff from reaching the public.

Furs Sold for Bread

Three dozen loaves of bread will buy a white fox fur in the streets of the Bulgarian city of Verna

Guarantee of a few months' board and lodging will bring in exchange a costly mantle of mink or marten, or a set of silver fox.

Russian refugees, seeking safety and shelter, are the vendors. The buyers are any persons who are lucky enough to have the necessities of life to spare.

Money has almost ceased to have value in these countries, struggling with famine, industrial paralysis and political chaos.

Everyone does business in Bulgaria on the literal trading principle, swapping luxuries now become almost worthless, for a few of life's barest necessities.

Fur buyers hardy enough to withstand the hardships and dangers, and who could arrange for the transportation of their purchases to London, Paris, or America, would reap bonanzas, for the Russian exiles are chiefly of the middle class, once well-to-do, and wear fortunes in fur on their backs

Personals

Otto M. Rexinger, who for many years has been general manager of Morris & Company's Butterine department, with headquarters in Chicago, has decided to make his home on the Pacific Coast, and arrangements have been made whereby he will look after the company's margarin interests on the Coast, with headquarters at the Los Angeles, Calif., margarin branch house of Morris & Company.

Stanley Q. Brady, Western sales manager of the Thomas H. Lipton Tea Company, has been appointed sales and advertising manager of the

California Associated Raisin Company, Fresno, Calif., to succeed Holgate Thomas, who has resigned, effective January 1, 1921.

Albert F. Pfeiffer, manager of Armour & Company's canned food department, has resigned after 32 years' service with that packing company, and will become associated with the Hunt Brothers Packing Company, San Francisco, as vice-president. Mr. Pfeiffer started in the employ of Armour & Company at the age of 14 as errand boy for Philip D. Armour, Sr., from which position he worked his way up to the position as manager of the canned food department. G. A. Eastwood will succeed Mr. Pfeiffer.

PEANUT BUTTER INDUSTRY

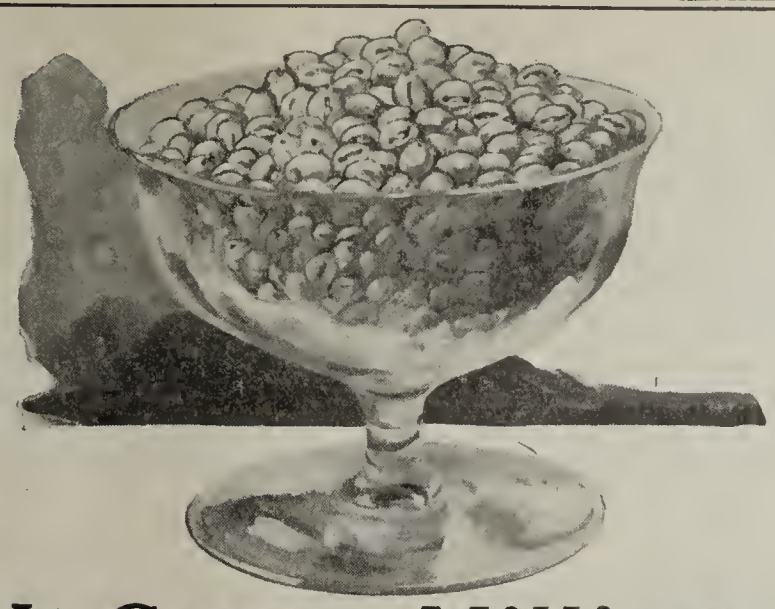
(Continued from page 15)

are often filled directly from the spout of the grinder, but sometimes from a separate filling machine. When the butter is transferred from the grinder to a filling machine this should be accomplished by means of a closed conveyor rather than in open tubs or pails. When tubs or pails are used they should be kept covered, so as to keep out particles of dust and dirt that may be in the air. Another method is to have the grinding machines upon a raised platform, discharging directly into the filling machine. The only advantage in using a filling machine is to get the butter more thoroughly mixed, but that is not necessary with up-to-date grinders, especially when these are equipped with the auxiliary hopper for the salt. In filling either from the grinder or from the filling machine the container should be filled directly from the spout. The bottles and glass jars usually are filled from the bottom, the operator holding the container against the spout with sufficient pressure to prevent the formation of air bubbles.

The containers when filled should be sealed in order to prevent the butter from spoiling or getting dirty. In some factories where glass jars are used, the sealing is done in a vacuum chamber. The lids are put on and the jars are placed on trays which are pushed into the chamber, where the air is drawn out.

It should be borne in mind that rubber packing or rubber rings will not be satisfactory, as the oil in peanut butter will dissolve the rubber. Either paper or some compound which is not attacked by the oil should be used for sealing the jars.

When pails or tubs are used for packing peanut butter they are pro-



It Greets Millions

Every Morning—Bubbled Wheat

Do you realize how children now revel in Puffed Grains, which a few years ago were unknown?

Millions now enjoy them, morning, noon and night. And think what a change they've wrought.

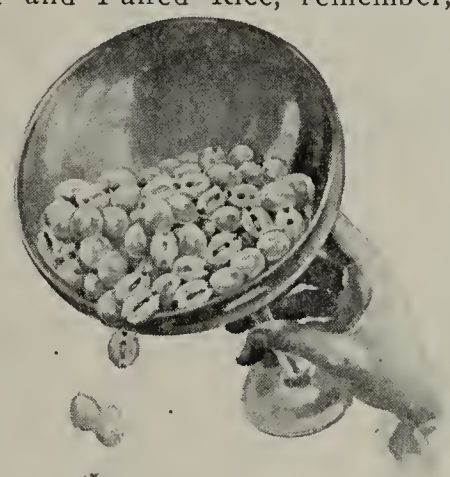
Now they eat whole wheat as never before, because it comes as bubbles, airy, crisp and toasted, eight times normal size.

They mix Puffed Rice and Puffed Corn with their fruits. They use them in candy making or as garnish on ice cream. They douse them with melted butter for any hungry-hour delight.

But they are foods—not tidbits

The flimsy texture and the nut-like taste make Puffed Grains seem confections. Let them seem so, for foods should be enticing.

But Puffed Wheat and Puffed Rice, remember, are simply whole grains exploded. They are made by Prof. Anderson's process. Every food cell is blasted for easy, complete digestion. They supply whole-grain nutrition in the best forms known. Let them supplant the lesser grain foods in every way you can.

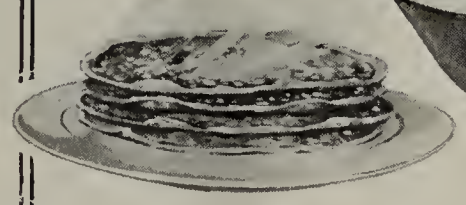


Puffed Wheat

Puffed Rice

Puffed Corn

Also Puffed Rice Pancake Flour



The New Pancakes

Now we mix ground Puffed Rice in a perfect pancake flour. The Puffed Rice flour makes the pancakes fluffy and it gives a nut-like taste. You never knew pancakes half so delicious. Ask for Puffed Rice Pancake Flour. It is self-raising, so you simply add milk or water.

The supper way

For luncheon, supper or at bedtime float in bowls of milk. Then you have a supreme food fitted to easily digest.

The airy morsels, flaky, flavory and crisp, seem almost too good to eat. But think what an ideal dish you get from steam-exploded whole wheat in a bowl of milk.

The Quaker Oats Company

Sole Makers 3448

vided with wood or metal covers held in place with wire, strips of metal, or nails, no attempt being made to make them airtight. Large containers are not satisfactory for peanut butter except for hotels, restaurants, or other establishments using large quantities of the product. For the individual consumer or for the small family small containers are more satisfactory, because the butter can be used before it deteriorates. The principal objection to the sale of bulk peanut butter is the fact that the containers are frequently left uncovered in the stores and the contents exposed to dust, dirt, and insects. Unless the butter is sold within a short time it may become rancid when exposed to the air.

GLASS JARS MUST BE CLEAR AND WHITE

Where peanut butter is put in bottles or glass jars these are usually packed in wooden boxes or pasteboard cartons holding one, two, or three dozen. The jars used should be clear and white, as glass of a greenish tint will give the best peanut butter an inferior appearance.

Dealers handling peanut butter in bulk should bear in mind that the oil has a tendency to rise to the top. In order to have a uniform product it is desirable to stir the butter frequently with a wooden paddle. Consumers often complain that oil rises to the top of peanut butter in glass jars. When this happens it is only necessary to mix the oil thoroughly with the remainder of the contents by stirring with a spoon or knife.

SODA WATER MANUFACTURERS FAVOR CALDER BILL

(Continued from page 11)

their power to bring about a substantial reduction in the price of said bonds.

The Procurement of Non-Beverage Alcohol

WHEREAS, Under the existing rules and regulations of the Internal Revenue Department of the United States, the matter of necessary procedure to procure non-beverage alcohol for use in manufacturing soda water flavors, flavoring extracts, and similar preparations is unnecessarily complicated, with the result that needless delays in procuring alcohol frequently occur, and which condition results in embarrassment to the trade and causes difficulty in filling orders promptly, and in other ways works to our disadvantage; be it

RESOLVED, That we, the National Manufacturers of Soda Water Flavors, express it to be the sense of this Convention that said regulations be amended, if possible, so as to bring about relief from the situation that exists, and that during the coming year we co-operate with all Associations interested in this matter towards the end of securing as much relief as can be secured.

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY
Chicago *In Business 66 years* U. S. A.

Clears your desk for action

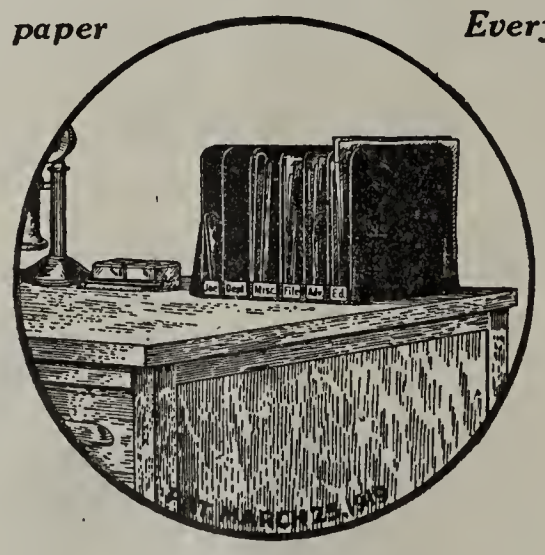
A place for every paper

A clean desk inspires quick and efficient handling of work. It enables you to concentrate and think clearly on the one problem in hand.

With your desk covered by a confusion of miscellaneous papers, you cannot work to the best advantage.

A Desk SYSTEM File will smooth out many of your troubles, especially those caused by congestion of important papers.

It holds your important papers ready for quick reference. Systematizes your desk work.



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A Desk SYSTEM File will pay for itself in a few months. Occupying a space no larger than a common wire desk basket, it enables you to have any number of indexed filing compartments.

Compact, neat and refined in appearance, it will give an air of personal efficiency to your desk.

It is an ever-ready private secretary, for filing or distributing correspondence and memorandum papers, covering each department of your business.

Time Saving
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Extra compartments added as required. Made of enameled sheet steel. Ask for booklet, "How to Get Greater Desk Efficiency."

Four Compartment File, $6.00

Extra Units $1.50 each.

Ross-Gould St. Louis.
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E. PRITCHARD

Packer and Manufacturer of the Finest

"EDDYS"

BRAND

Canned Foods, Jellies, Preserves,
Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

Bridgeton, N. J. and 331 Spring Street, New York

CANNED SALMON

ALL GRADES
ALL SIZES

Largest Distributors in the World

KELLEY-CLARKE CO.
New York City Seattle, Wash.

TIN and FIBRE CONTAINERS

for

Foods—Drugs—Oils

Infinite Variety
Large Capacities
Prompt Deliveries

American Can Company
Chicago New York San Francisco
With Offices In All Large Cities

Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

Dixie Margarine is pasteurized into purity in every ingredient.

Churned by Wm. J. Moxley Inc. Chicago

Every Kind of WARD'S

FAR FAMED

BREAD and CAKES

is the finished and perfected result of skill, science, experience, and the use of highest grade materials.

WARD BAKING COMPANY

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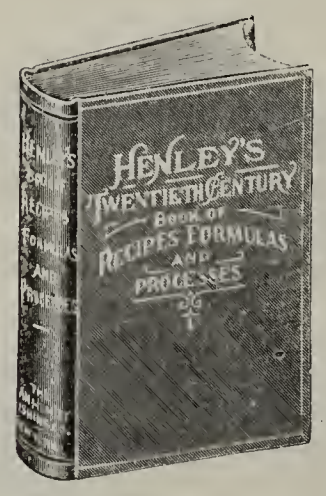

10,000 Trade Secrets
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Chemical Processes
Scientific Formulas

HOW TO MAKE EVERYTHING
FOR THE HOME, THE FACTORY AND THE WORKSHOP

Antiseptics, Waterproofing, Lubricants, Rust Preventatives, Dyes, Filters, Cleaning Preparations, Enameling, Beverages, Inks, Adhesives, Polishes, Disinfectants, Flavorings, Cosmetics, Ceramics, etc., etc.; how to make fly paper, to color flowers artificially; to estimate weight of ice by measurement; to make materials fireproof; to work with metals—aluminum, brass, etc.; to make anything and everything, from A to Z.

THIS IS THE BOOK

every one who seeks PRACTICAL, ACCURATE KNOWLEDGE and guidance in his everyday work MUST HAVE at his command.

It is a money-maker and a money-saver; it appeals to the young as well as to the old. Great business enterprises owe their success to the manufacturer or sale of simple inventions or compounds, usually the result of an experiment at home. One woman writes: "I am supporting myself and two small children from the sale of toilet articles I put up by following directions in your book."
Profit by the knowledge that has made others successful. GET THIS BOOK TODAY.

Price $4.00

PATTERSON PUBLISHING CO.
38 S. DEARBORN ST., CHICAGO

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The American Food Journal, published monthly at Chicago, Illinois for October 1, 1920.

State of Illinois } ss.
County of Cook }

Before me, a notary public, in and for the State and county aforesaid, personally appeared C. A. Patterson, who, having been duly sworn according to law, deposes and says that he is the editor of The American Food Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:
Publisher, Patterson Publishing Co., 659 First National Bank Building, Chicago.
Editor, C. A. Patterson, 659 First National Bank Building, Chicago.
Managing editor, none.
Business manager, C. A. Patterson, 659 First National Bank Building, Chicago.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)
Patterson Publishing Co., 659 First National Bank Building, Chicago.
C. A. Patterson, 659 First National Bank Building, Chicago.
H. F. White, 108 S. LaSalle St., Chicago.
J. McEwen, 117 S. Taylor St., Oak Park, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

C. A. PATTERSON.
(Signature of Editor.)

Sworn to and subscribed before me this 28th day of September, 1920.

(SEAL) HARRIET FRIEDL.

LOGANBERRY JUICE A POPULAR BEVERAGE

The coming of prohibition has been reflected by a definite increase in consumption of loganberry juice. Barrooms which formerly specialized in gin rickeys are now handing out loganberry cocktails to the thirsty. Distribution of the bottled juice through the confectionery and wholesale grocery trade of the country is also on the increase.

Enamel Lined Tanks for Oil or Food Stuffs

6 Horizontal Tanks, 7 ft. inside dia., 82 ft. long, 23,250 gallons each.
6 Horizontal Tanks, 8 ft. inside dia. by 82 ft. long, 30,380 gallons each.
12 Horizontal Tanks, 10 ft. inside dia. by 44 ft. long, 25,544 gallons each.
69 Horizontal Tanks, 10 ft. inside dia. by 46 ft. long, 24,366 gallons each.
37 Vertical Tanks, 9 ft. 6 in. inside dia. by 17 ft. 8,463 gallons each.

CHAS. S. JACOBOWITZ
Brewery Dismantler
1382 Niagara St. Buffalo, N. Y.

NUCOA

The sun never sets on Nucoa sales. It is sold from San Francisco to Antwerp. It will encircle the globe. It must. It repeats.

The Nucoa Butter Company
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BUTTERS BREAD — STAYS SWEET

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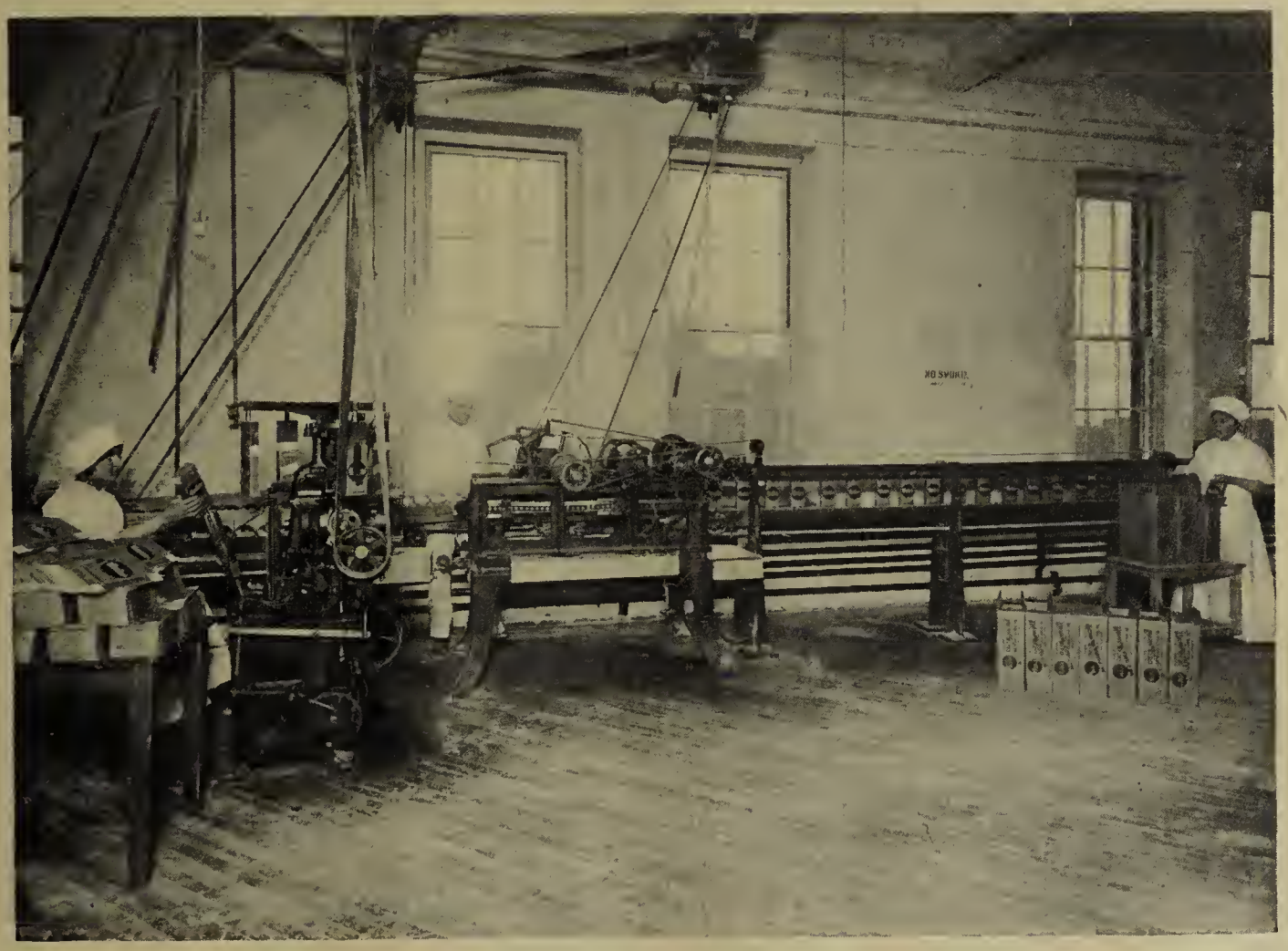
The American Food Journal

The National Magazine of the Food Trades



PACKAGING BREAKFAST FOOD BY AUTOMATIC MACHINERY IN A LARGE FOOD MANUFACTURING PLANT

Special Articles In This Issue.

Therapeutic Value of Some Common Foods With Special Reference to Yeast—Margarin Production Shows Steady Increase—United States Export Trade in Corn Sirups and Corn Sugar—Cold Storage Research in Great Britain—Decision in Dr. Price Baking Powder Case—Dr. Carl L. Alsberg's Views on Uniformity in Food Control Laws.

DECEMBER, 1920

GOOD SOUND HEALTH

Means a Happy, Prosperous New Year

Today interest is centered in the familiar little cake of

Fleischmann's Yeast

The Energy Builder
Creator of Vigor
The food tonic—
The complexion Beautifier

Two or three cakes a day, eaten before or after meals, will keep you healthy and happy.

Fleischmann's Yeast For Health

On sale at all grocers.

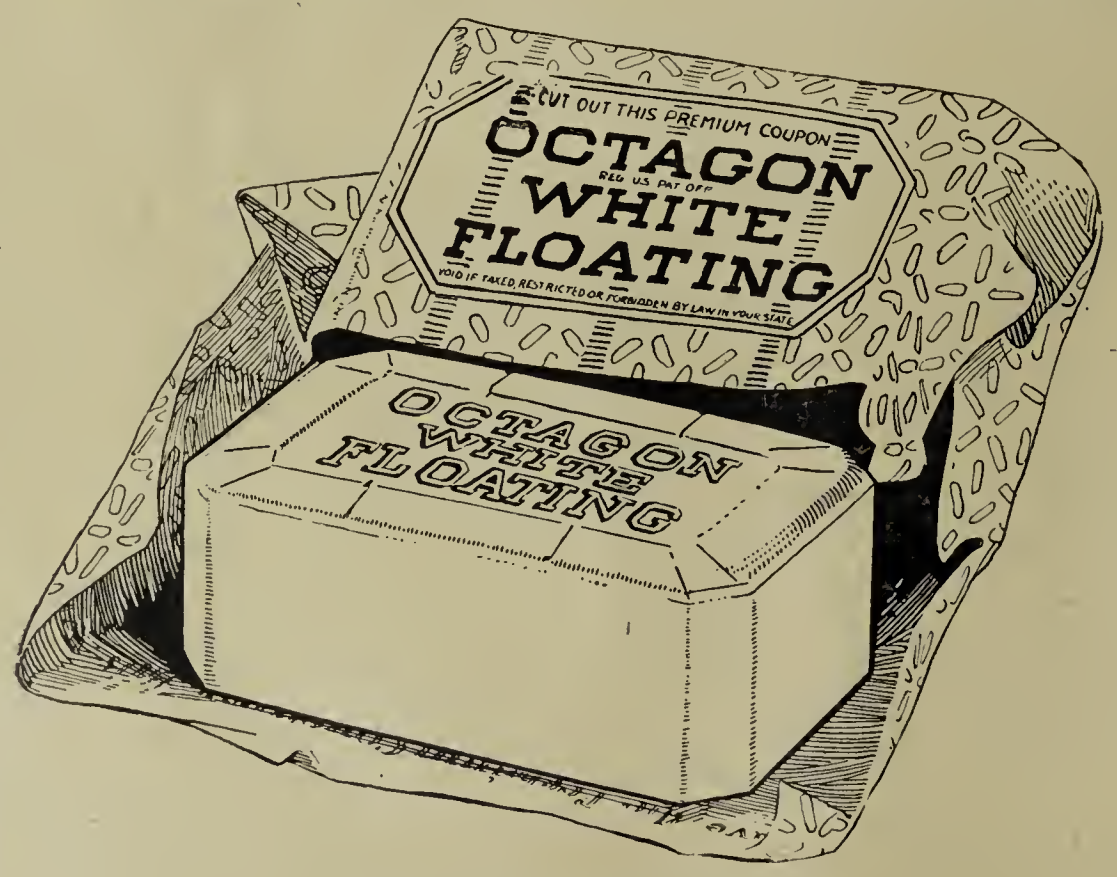
FAC-SIMILE OF

OUR LABEL

THE WAY TO TAKE YEAST

Yeast has an appetising, creamy taste. You eat from one-half to a whole cake 3 times a day before meals; or take it crumbled in water, fruit juices or milk.

Yeast is not a drug or medicine. It is a food and a tonic, and as such should be taken persistently for best results.



Quantity Price Offer

OCTAGON WHITE FLOATING SOAP—in boxes of 50 or 100 cakes—can be included with Octagon Soap, Octagon Soap Powder and Octagon Scouring Cleanser to get quantity price.

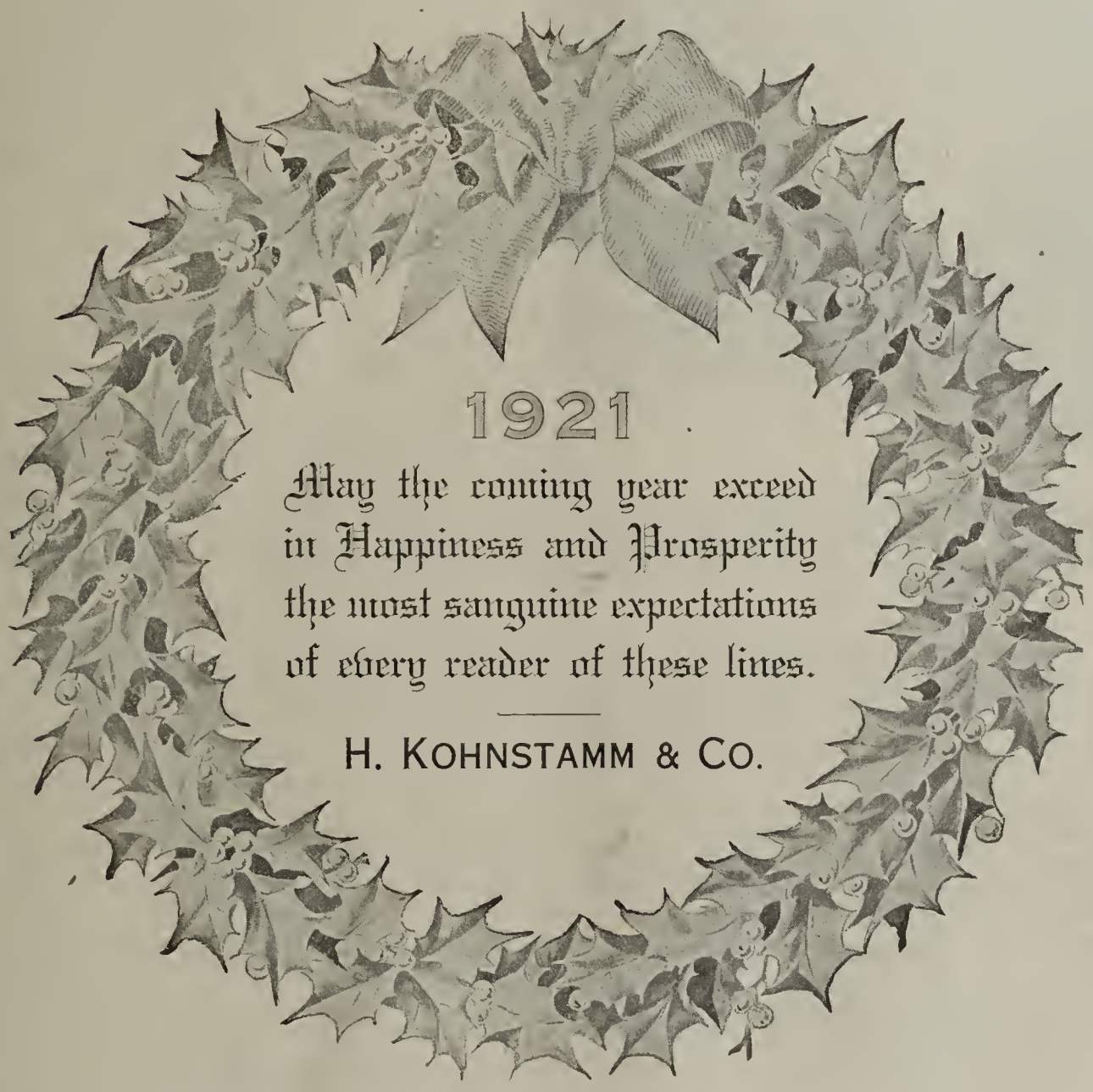
Profit for you—Premiums for your customers

COLGATE & CO. Jersey City, N. J.

A Combination Soap

ANOTHER Octagon Product. Essentially a bath and toilet soap which at the same time meets all the requirements of a soap for dainty laundering.

Octagon White Floating Soap is fast gaining the recognition it deserves. Sales increasing everywhere. Get behind it—push it—display it wherever possible. Quick turn-over and good profit. Order now—OCTAGON WHITE FLOATING SOAP will sell. The name "COLGATE'S OCTAGON" is recommendation enough—the quality assures satisfaction—effective advertising in many cities will keep it to the front.


1921
May the coming year exceed
in Happiness and Prosperity
the most sanguine expectations
of every reader of these lines.
H. KOHNSTAMM & CO.

FOOD PRICES

Study Costs

Many breakfasts cost you ten times Quaker Oats

Quaker Oats costs one cent per large dish.

You can serve 12 dishes of Quaker Oats for the cost of a single chop. Or five dishes for the cost of an egg.

Quaker Oats yields 1,810 calories per pound—the energy measure of food value. Round steak yields 890—eggs 635.

Quaker Oats is only 7% water. In fish the waste and water are 85%. In eggs they are 77%.

Meat, eggs and fish will average nine times Quaker Oats in cost, for equal calories of nutriment. That means 35 cts. on a breakfast for five, or $125 per year.

Oats—the supreme food

Yet the oat is the greatest food that grows. It is almost a complete food—nearly the ideal food. As a body-builder and a vim-food it has age-old fame. It is the best food you can serve to start the day.

Calories per pound	
Quaker	1810
Round Steak	890
Average Fish	350
Potatoes	295
Canned Peas	235

Millions of people nowadays make Quaker Oats their basic breakfast. They save immensely on their food cost. They guard against underfeeding. The breakfasts are delicious. Then they use the saving to buy costlier foods for dinner.

Quaker Oats

The finest oat dish created

Oat lovers the world over get Quaker Oats for flavor. This brand is flaked from queen grains only—just the rich, plump, flavory oats. We get but ten pounds from a bushel. Yet this extra flavor costs no extra price. Ask for Quaker and you get it.

Packed in sealed round packages with removable cover

The American Food Journal

The National Magazine of the Food Trades

Vol. XV DECEMBER, 1920 No. 12

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Swift's Premium Oleomargarine

is manufactured in fourteen modern factories, so conveniently located throughout the United States, that every pound of product is delivered fresh—its delicious flavor unimpaired by time and long travel.

It is highly nutritious and very economical.

Swift & Company, U. S. A.

Sweet Pure Clean

HEBE

—the modern cooking aid reclaims wholesome skimmed milk for human food.

Skimmed Milk—millions of pounds of it containing the body-building, strength-giving elements so necessary in our diet are wasted annually. And this because lacking a fat content skimmed milk does not appeal to the palate generally as a food beverage, nor does it find acceptance generally as a cooking medium.

Thanks to scientific minds a process has been developed for enriching skimmed milk by emulsifying with it highly refined cocoanut fat. Thus the new food product HEBE is created to serve as an economical auxiliary to the family milk supply for cooking and baking purposes, thereby reclaiming skimmed milk for human use—establishing a market for this great by-product of our dairies—and adding materially to the food supply of the nation.

Used in cooking and baking HEBE enriches the food and helps to balance the diet as it contains the protein, carbohydrates and mineral salts of the skimmed milk and the heat and energy units of the cocoanut fat.

HEBE is produced under the most sanitary conditions—is put up in hermetically sealed cans and sterilized. The label tells plainly what HEBE is—"a compound of evaporated skimmed milk and vegetable fat" and states that it is not to be used in the place of milk for infants. It is just as frankly advertised and marketed.

"HEBE—Its Dietetic and Economic Value" and "Today's Food Problem" are booklets of especial interest to food officials, dietitians and economists. They will gladly be sent upon request. Address 3209 Consumers Bldg., Chicago.

THE HEBE COMPANY

Chicago Seattle

The American Food Journal

The National Magazine of the Food Trades

Vol. XV CHICAGO, DECEMBER, 1920 No. 12

Decision in the Dr. Price Baking Powder Case

United States Court of Appeals at St. Louis Renders Opinion

The United States Circuit Court of Appeals has rendered its decision in the now famous Dr. Price Baking Powder case. The opinion has an important bearing on the question of the statements which can properly be made on labels under the Federal Food and Drugs Act and under the State laws regulating the sale of food products.

The Royal Baking Powder Company advises THE AMERICAN FOOD JOURNAL *that a change in the label on this product is now being made to conform to the decision of the court. The text of the opinion is as follows:*

Appellant has been for years a manufacturer and seller of a baking powder known as "Dr. Price's Cream Baking Powder." Until recently this powder was what is known as a cream of tartar powder, as distinguished from phosphate powders or alum powders. A few months before this action was commenced this powder had been changed to a phosphate powder, by entire substitution of phosphate for cream of tartar as the acid ingredient. Appellant, thereupon, altered the labels upon the cans of this powder in an attempt to avoid deception of the buying public, and, at the same time, to retain the good will it had, during years, built up for the Dr. Price brand. Some of these new-labelled cans of the phosphate powder were sent into Arkansas. Under the statutes of that state against misbranding of foodstuffs, the State Commissioner of Mines, Manufactures and Agriculture is empowered to issue a certificate to the effect that an article of food is misbranded, and upon receipt of such certificate by any prosecuting attorney of the state, it is his duty to institute criminal proceedings against persons selling or offering to sell such misbranded articles. Such a certificate was issued by the commissioner in regard to the above new phosphate powders made by appellant. This bill was filed against Emerson, as a prosecuting attorney and as representative of all prosecuting attorneys, to enjoin such prosecution. Upon final hearing, the court found that the certificate issued by the commissioner had been erroneously issued, because not based upon substantial evidence at the hearing before him, as required by the state statute. It, therefore, granted a permanent injunction against prosecutions based upon that particular certificate. The court, however, refused to enjoin Emerson and other prosecuting attorneys from beginning and pursuing prosecutions for misbranding "on their own initiative under the general laws of the state." From this latter portion of the decree this appeal is brought.

The jurisdiction of the court is contested by appellee, upon the grounds that the jurisdictional amount is absent, and that this is an attempt to enjoin a criminal prosecution. The jurisdictional amount is alleged to be the value of the good will in the long established brand of powder made and sold by appellant. The value of this good will is is not questioned, but appellee contends that its present use is a fraud prohibited by statute, and there can be no property right or value in an unlawful brand. Of course, no right to defraud can be recognized by courts as having any claim to legally exist or be protected, or as having any value. Here, however, the appellant has had for years a valuable good will in the brand of powder known as "Dr. Price's Cream Baking Powder," and it claims that the new label is lawful and enables it to retain this good will, and that such valuable good will thus lawfully employed is threatened with destruction by the illegal acts of appellee. If these claims of appellant are true, it has a valuable property right which is imperiled. At least, that is the substantial basis of the action as revealed in the complaint, and therefore sufficiently establishes the jurisdiction against this objection.

It is true that the general rule is that courts of equity will not enjoin criminal prosecutions. The exception is that where property rights are involved and it is claimed seriously and in good faith that the act of the prosecutor is not authorized by law, equity can act. *Hebe Co.* v. *Shaw*, 248 U. S. 297; *Greene* v. *Louisville, etc., R. R. Co.*, 244 U. S. 499, 506, 507; *Truax* v. *Raich*, 239 U. S. 33, 37; *Western Union Tele-*

graph Co. v. *Andrews,* 216 U. S. 165; *Ex parte Young,* 209 U. S. 123. This lack of legal authority may arise because the act is within an invalid statute, or because it is not authorized by a valid statute. In either case the act is without legal sanction, is not protected by the official status of the prosecutor and can be restrained. The complaint alleges a multiplicity of threatened prosecutions, and irreparable injury thereby through destruction of a valuable good will in an established trade brand; that such prosecutions are arbitrary, capricious, and unreasonable, and, therefore, not within nor authorized by the state statutes, but violative of appellant's rights, under Amendment XIV, Section 8 of Article I and Article VI of the national Constitution. These contentions are, apparently, urged seriously and in good faith. They support the jurisdiction of the court.

The contentions made by appellant are (first) that the Arkansas statute as to misbranding does not include baking powders; (second) that if such statutes do include baking powders, the only penalty provided for the sale of such as are imported into the state is a seizure of such powders through a proceeding *in rem;* (third) that the label involved complies with the national Food and Drugs Act, and shipment of powders so branded cannot be interfered with prior to "the first sale of said packages in Arkansas"; (fourth) that certain evidence was erroneously admitted and considered by the trial court; (fifth) that upon the entire evidence the conclusion should be that the new label was not a misbranding.

The basis of the claim that baking powder is not within the state misbranding statute are that such powder is not within the statutory term "article of food," and that the circumstances of the enactment of the statute prove that the legislature did not intend baking powders to be included in such term, even if that term were in itself sufficient to include them. The contention as to the first ground is that baking powder is not eaten or taken into the body, but that it is merely an agency for "raising" the bread through the release of carbonic acid gas by chemical action produced when moisture and heat in the bread dough act upon the powder. This seems an artificial view when the fact, admitted in the record, is considered that the appellant has for years carried on an extensive advertising campaign based on the claim that cream of tartar powders were healthful, while alum and phosphate powders were deleterious to health. The statute covers "any article of food," and was designed to protect the public from adulteration and deception. The term "any article of food" is sufficiently broad to cover any article ordinarily eaten or drunk, whether it be so used alone, or as a part of some mixture or compound which is eaten or drunk. Neither baking powder nor flour is eaten as such, but both are intended as components of bread. The purpose of the statute requires that this broad meaning be given the above term, unless the statute is to be materially crippled in its intended effect. The legal history of a similar English statute (38 and 39 Vict. C. 63) as construed in *James* v. *Jones,* (1894), 1 Q. B. 304, is not persuasive in the presence of the obvious purpose of the Arkansas statute.

But it is claimed that even though the term "any article of food" might be construed to include baking powders, yet the circumstances of enactment of this statute reveal that such construction was not intended by the legislature. This contention is based on the claim that this statute was closely modelled after the national Food and Drug Act (June 30, 1906, 34 Stat. 769); that the national act, section 8, which defined misbranding, was, by its terms, made applicable "to all drugs, or articles of food, *or articles which enter into the composition of food;*" that baking powders were brought within the act only by the above italicized language; that this language is omitted from the Arkansas statute; that, therefore, the legislature intended to omit such articles from the state statute. The national, as the state, act is aimed at adulteration, and also misbranding. The only language therein which could make baking powders subject to the adulteration provisions of the national act is "any article of food which is adulterated or misbranded," in section 1, and "The term 'food', as used herein, shall include all articles used for food, drink, confectionery, or condiment by man or other animals, whether simple, mixed, or compound," in section 6. The argument of appellant is that this language does not include such powders under the adulteration provisions of the act, because in the misbranding portions (section 8) it declares that misbranding shall apply "to all * * articles of food, or articles which enter into the composition of food." We have neither been cited nor have we found any adjudication of this exact point in any contested case. The nearest approach is *Hipolite Egg Co.* v. *United States,* 220 U. S. 45, where the charge was that preserved eggs were adulterated. One point urged in that case (page 52) was that the act did not apply "to an article of food which has not been shipped for sale, but which has been shipped solely for use as raw material in the manufacture of some other product." The gist of that contention was that the shipment was not for sale and no particular emphasis was placed on the character of the product. However, the court held the preserved eggs to be within the provision against adulteration. Such eggs are not of themselves food or fit for or intended to be used alone as food, but are designed for use with flour and other articles in making cakes. There is a guide, persuasive though not governing, in the action of the administrative officers who have for more than a decade been charged with the enforcement of this law. In 1906, the year the law was enacted, the Secretary of Agriculture received a letter of inquiry as follows: "We import a preparation of gelatin preserved with sulphurous acid for the purpose of fining wine. This gelatin is not used as a food and does not remain in the wine, although a small amount of the sulphurous acid may be left in the wine. Please inform us if the sale of this product is a violation of the food law." The ruling thereon of the Secretary (Food Insp. Dec. No. 48) was "It is held that the products commonly added to foods in their preparation are properly classed as foods and come within the scope of the food and drugs act. * * * * Pending a decision on the wholesomeness of sulphurous acid as provided in Regulation 15 (b), its presence should be declared." Regulation 15 governed "Wholesomeness of colors and preservatives." Since then the department has repeatedly prosecuted the adulteration of such articles as gelatin, flour, tomato pulp, and tomato puree. None of these articles is fit for food as such, but all are intended to be used as components of food. The department has, also, adopted a definition and standard for baking powders (F. I. D. No. 174). So far as we are advised, this is the first attempt to contend that the above sections of the national law do not cover adulteration of all articles commonly entering into food composition. The above sections are copied into the Arkansas statute. If the omission in the Arkansas statute of the portion of section 8, above italicized,

has an influence upon the construction of that statute, it is to emphasize that adulteration and misbranding are upon an equal footing so far as articles included, and that both cover all articles commonly entering into food.

The second contention is that the only penalty under the state statute is forfeiture in an in rem proceeding, and that therefore prosecutions for sales are without the legal authority of the state officials. It is claimed that the personal penalties apply only to the manufacture within the state. This contention is based upon section 1 of the act, which penalizes the "manufacture within the state any article of food or drug which is adulterated or misbranded within the meaning of this Act * * * " (*Kirby and Castle's Digest,* section 6369, Acts of Arkansas, 1907, p. 1156). If this were the only pertinent portion of the statute there would be more in appellant's claim. But section 6 of the act provides for the sale of adulterated or misbranded articles, and section 7 provides that "no dealer shall be prosecuted under the provisions of this Act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party residing in this state, from whom he purchased such articles * * * ." The title of the act, to which we may refer for construction purposes (36 *Cyc.* 1133 note 91), is "An Act preventing the manufacture or sale of adulterated or misbranded or poisonous or deleterious foods, drugs, medicines and liquors and for other purposes."

Appellant's third contention, which is that the new label complies with the national act and therefore shipment of powders so branded cannot be interfered with prior to "the first sale of said packages in Arkansas," is not in the case, for there is no showing that any attempt has been or will be made to apply the statute to imported original packages. It may be added that where the state law is not in conflict with the national act, a broad latitude is allowed states in protecting their citizens from adulterated or misbranded articles. *Hebe Co.* v. *Shaw,* 248 U. S. 297; *Corn Products Co.* v. *Eddy,* 249 U. S. 427.

The fourth contention is that certain evidence was erroneously admitted and considered by the trial court in reaching the conclusion that the new label was misleading. The challenged testimony may be classified as follows: statements by grocers and others that they believed buyers would be deceived into thinking that they were buying the cream of tartar powder formerly sold under this brand; advertisements, claimed to be deceptive, issued by appellant concerning the new powder; advertisements issued by appellant prior to the change commending cream of tartar as an ingredient, and condemning phosphate and alum as ingredients. As we may examine the entire evidence which we deem pertinent, disregarding such as seems to us immaterial, and determine the issue of fact de novo, no harm can result in this court from the *admission* of evidence in the trial court.

The final and crucial question is whether the new label on the new phosphate powder is deceptive. Appellant contends that the new label accurately and truthfully states the facts, and all of the facts; that no one, reading the label, could possibly be deceived; that a change of ingredients may be properly made and the brand name preserved, provided the label, after the change, truthfully states the ingredients; that it cannot be held responsible for deception of such purchasers as do not take the trouble to notice the plain statements on the label. The broad purpose of the Arkansas statute is to prevent deception through a label or brand. The deception must be of the average buyer of the product. (*Ansehl* v. *Williams,* this court, filed July 15, 1920). To ascertain whether a given label would act deceptively, the attitude of the average buyer toward that product at the period the label is put out may be examined. In no other way can there be proper determination of the probable effect upon him of the label. In most instances there is no definite nor particular information as to this attitude and therefore, the average buyer, in such instances, is treated as a person of average intelligence, exercising ordinary care in ascertaining what he is purchasing. In such cases he is charged with knowledge of what the label fairly tells him. The question there gets down to the statements upon the label itself. If they, are, in words, form, and arrangement, such as to fairly apprise the average buyer of the truth as to the product, they are sufficient. There are instances, however, where it can be said with fair accuracy that the average buyer has certain things in mind when he purchases a certain product. In such cases this attitude of mind is one of the circumstances bearing upon the effect of the label. Another such circumstance is the familiarity of the average buyer with the product and the label. When a certain symbol, name, mark, or label has become established in the public mind and confidence as having a certain definite quality, composition or integrity, it is obvious that the average buyer relies thereon and ceases naturally to scrutinize the purchased package as he would in the absence of such experience. In the present case appellant and its trade predecessors have built up a large trade and a valuable good will in the public mind in "Dr. Price's Cream Baking Powder." The brand has become established in public esteem during more than sixty years. Baking powders have long been articles of wide general consumption. What has served to establish this particular brand in public favor, and what does the buying public think it is getting when it purchases "Dr. Price's Cream Baking Powder"? The excellency of a baking powder depends partially upon the skill used in manufacture and partially upon the ingredients. This record reveals that appellant has employed commendable skill in the manufacture of its product, but there is no serious basis in the evidence for a contention that this skill is superior to competitors, or, at least, so superior as to constitute the reason for the high esteem in which the buying public has long held this brand. The record is convincing that the governing inducement in the public mind was the particular acid ingredient used by appellant. The reasons for this conclusion will be later revealed in this opinion. Baking powder is a mixture, in dry form, of certain alkali and acid substances combined with a "filler." When moistened and heated, as in baking dough, a chemical reaction occurs between the acid and alkali agents, which liberates carbonic gas. This gas is the agency which "raises" or leavens bread. The "filler" is nearly always of cornstarch, and performs the passive office of preserving the acid and alkali agents inactive until release is desired. The alkali agent is usually bicarbonate of soda. The acid agent differs, and thus gives character, name, and classification to the powder. This agent is tartrate (cream of tartar or tartaric acid), phosphate, or alum. Powders are therefore classified and known generally as "cream of tartar," "phosphate," or "alum" powders. This classification is not merely technical, but is known to the purchasing public. Cream of tartar and tartaric acid are vegetable in origin, being derived

(Concluded on page 32)

Secretary of Agriculture Suggests Changes

Administration of Food and Inspection Laws Needs Alterations, Says Mr. Meredith

IN HIS annual report Secretary of Agriculture Meredith calls attention to certain needed changes in the Food and Drugs Act and in the meat inspection service. Paragraphs from his report are quoted as follows:

Utilization of Surplus and Waste Products

"Along with the work of controlling diseases and insect pests, of introducing and developing better plants, of working out improved cultural methods and practices, it is essential that process be worked out for converting perishable farm products into commodities which can be carried from the season of plenty to the season when they are actually needed. The fact that they can not now be so carried frequently results in the marketing at one time of larger quantities than can be disposed of profitably, and demoralization of the market follows, with consequent loss to the farmers. Industries founded upon the utilization of surplus farm products would be of tremendous value in meeting this problem.

"The Bureau of Chemistry has accomplished some important results along this line in recent years. On the basis of its investigations, for example, there has been developed a citrus by-products industry for the utilization of cull and surplus oranges and lemons. It has also discovered a feasible method of utilizing corncobs, which always have been a waste product, so that their entire content can now be made into highly useful articles. The experts of the bureau have produced from corncobs a large yield of adhesive suitable for pasting container box board. After this is removed, a considerable quantity of a lower grade product can be made, and the residue is practically pure cellulose, which can be used in the manufacture of a number of commodities, including a good quality of paper when mixed with a suitable quantity of wood pulp. After the processes for recovering all these articles had been worked out, it was discovered that a considerable quantity of a very valuable chemical—furfural—was formed, and methods of recovering it have been developed. Furfural is a basic intermediary in dye manufacture and, in addition, has great possibilities as a solvent and as a substitute for formaldehyde in the manufacture of plastics. Many other similar lines of investigation are actively under way, but these two illustrations clearly indicate what can be done toward opening up new industrial outlets for agricultural products.

Office of Development Work

"It has been found, however, that the benefits of the important discoveries made by the scientists of the Bureau of Chemistry are not always fully realized. The difficulty is that of bringing about their commercial development. In order to meet this situation, there has been established in the bureau an Office of Development Work, the function of which is to aid in bringing the discoveries to the attention of business men and others. When new processes have passed the experimental laboratory stage, it becomes the duty of this new office, which is conducted by engineers rather than chemists, to investigate their commercial value and the cost and method of placing them on a commercial production basis. Efforts then will be made to inform manufacturers and business men regarding the opportunities for them to develop facilities for the utilization of the discoveries, so that the people of the country may secure full benefit of them.

The Food and Drugs Act

"In order to secure the more effective and efficient enforcement of the Food and Drugs act, the department should be specifically authorized to establish standards of strength, quality, and purity for the articles subject to its provision, and ample power should be given it to enforce compliance with these standards. The term "drugs," as defined in the act, should be broadened to include specifically all cosmetics, toilet preparations, face creams, hair dyes, and antifat and antilean remedies; and all drugs containing methyl alcohol, for internal or external use, should be deemed to be adulterated, although the use of methyl alcohol in their preparation should be permitted, provided it is completely eliminated from the finished products. The list of habit-forming drugs set forth in the second paragraph of section 8 is incomplete and should be extended to include, by name, a number of dangerous substances commonly found in drug preparations; or, as an alternative, a definite requirement should be incorporated in the law that all habit-forming or poisonous drugs, or their derivatives, must be declared on the labels or packages. Virulent poisons should be brought within the scope of the fact, and authority should be given to determine, from time to time, what substances shall be regarded as virulent poisons. The department should have power to inspect establishments in which foods or drugs are prepared for interstate or foreign commerce, or for sale in the District of Columbia or the Territories, in order to ascertain whether the articles are adulterated or misbranded; and the misbranding provisions of the act should be extended to food containers so made or shaped as to be likely to deceive or mislead the purchaser as to the quantity, quality, size, or origin of their contents.

Food Products Inspection Law

"The food products inspection law, at present, is limited in its operation to products shipped in interstate commerce. This limitation should be removed. The service authorized by the law is wholly permissive and in no way regulatory or mandatory and, therefore, does not interfere with the rights of any citizen. It tends to facilitate the distribution and marketing of farm products, since it hastens the settlement of disputes as to their quality and condition upon arrival in the market, and any shipper should be permitted to take advantage of it. It

would be desirable, also, to amend the law so that inspections may be made at points that can be conveniently reached from important central markets.

THE MEAT INSPECTION ACT

"The meat-inspection act has been in operation 14 years and certain changes in it are clearly desirable. Authority should be given to require that carcasses and parts of carcasses, meats, and meat food products shall bear labels which will correctly indicate their kind and character. An amendment to this effect would go far toward preventing fraud and deception because purchasers would then have exact information as to what they buy. The existing doubt as to whether the law applies to shipments from a State to a Territory or to the District of Columbia, or vice versa, should be removed. In order to maintain a prosecution for the shipment of unsound meat, under the act as it now stands, it is necessary for the Government to show knowledge on the part of the shipper as to its unwholesomeness at the time he offers the product for shipment in interstate commerce. This requirement should be eliminated.

"On account of the peculiar construction of section 21 of the act, there is some question as to whether the prohibition contained in it regarding the interstate transportation of unwholesome meat and meat products applies only to farmers, retail butchers, and retail dealers. There is also doubt as to whether the element of sale is neccssary in order to constitute an offense under this section. These ambiguities should be corrected, and amendments should be inserted which would effectively prohibit the interstate shipment, for food purposes, of articles which become unsound subsequent to inspection, as well as traffic in unsound meats by persons who conduct their own transportation.

"Specific authority should be provided for the withdrawal of inspection from establishments which violate any of the regulations promulgated for the enforcement of the act, since the conditions prescribed by them are nccessary to insure the wholesomeness of meat and meat food products designed for interstate shipment. Wherever the words "Inspected and Passed" and "Inspected and Condemned" appear in the statute, they should be changed to read "U. S. Passed" and "U. S. Condemned," respectively, in order to distinguish the Federal inspection marks from those of State and municipal authorities; and wider discretion regarding the disposition of fats and meat food products condemned for causes other than disease should be given, so as to permit their utilization for industrial purposes under proper regulations. The department also should be authorized to follow and reinspect products bearing the Federal mark of inspection after they have left the official establishments in which they were first examined and to cancel the marks if it is found that the continuance of their use would be misleading or an instrumentality of deception or fraud; and paragraph 545 of the tariff act of October 3, 1913, which now prohibits the importation of the classes of meat covered by the meat inspection act except under conditions prescribed by the department, but which provides no penalty for its violation, should be reenacted as a part of the meat inspection act, thus bringing it under the general penalty provisions. Other amendments of equal importance should be made, and a full statement of them will be presented to the Congress."

Uniformity in Food Control Laws

By DR. CARL L. ALSBERG

Chief of U. S. Bureau of Chemistry

UNIFORMITY in food control can be reached by several different methods of approach. The first and apparently most feasible method would appear to be uniform legislation. This may be accomplished by Federal act which would place under the Federal government the control of foods and drugs shipped in interstate commerce from the time of shipment until such products actually reached the ultimate consumer. Legislation of this type has been proposed but up to this writing has not been enacted.

Another method of reaching uniformity from the legislative end is by means of a gradual change in State laws whereby their provisions may become more nearly similar. There are many difficulties to be encountered in molding the laws of the several States into a common form. This is evidenced by the fact that from the time of the formation of the Union the principle of the sovereignty of the individual State has been tenaciously upheld by the people of this country. This principle has a foundation which is undoubtedly fundamental and which may be briefly stated as being based upon the wide extent of territory, the very different conditions which obtain in the different States, and the different ideas consequent upon these different environments. It is true that with improved methods differences are not so marked at present and upon this fact the hopes for uniformity are based.

At the twentieth annual convention of the Association of American Dairy, Food, and Drug Officials recently held in St. Louis, President Guy G. Frary, Food and Drug Commissioner of South Dakota, in his opening address, impressed upon the members of the association the necessity of working toward a certain uniformity. Mr. Frary suggested the advisability of the formation of a committee composed of State food and drug officials to confer with a similar committee to be appointed from among the members of the various food and drug trade associations for the purpose of outlining legislation which would be proper both from the viewpoint of the control official and of the honest and well-meaning members of the trade. This appears to be a forward step in the attainment of uniform legislation. The food manufacturer of today is intensely interested in this proposition and realizes that proper regulation works not only for the benefit of the consumer but also for the benefit of the manufacturer. A program of legislation arrived at through the combined efforts of the food official and the manufacturer should appeal to the law makers of the various States.

There are various organizations outside of trade organizations which

are interested in uniform legislation in various lines. The American Bar Association is constantly striving toward this end. The members of this association, by virtue of their legal knowledge, have a certain influence in the initiation of new legislation. It appears to me, however, that members of associations such as that of the American Dairy, Food, and Drug Officials should have a far greater influence. The members of the American Bar Association hold their membership by virtue of being lawyers and not by virtue of their official positions as judges, United States attorneys, States attorneys, etc. The members of the Association of American Dairy, Food, and Drug Officials hold their membership by virtue of their official positions and their influence is derived not only from their knowledge and proficiency in their professions but also from their official standing in the enforcement of laws both present and desired.

Another and possibly more feasible method of approach to uniformity is along the lines of uniform administration of existing laws. It has been the endeavor of the Department of Agriculture and of the various State officials through proper cooperation to place upon a uniform administrative basis the control of food and drug products. This procedure was initiated some years ago by the establishment in the Bureau of Chemistry of the Department of Agriculture of the Office of Cooperation wherein it was endeavored to coordinate the activities of the food and drug officials throughout the United States. The results obtained by this means have been very noticeable.

However, uniform legislation carries with it the idea of uniform training which cannot be satisfactorily obtained with a rapidly changing personnel in the enforcing bodies. When the food official is properly trained his position should be such as to retain him in office so that the benefit of his experience may not be lost. It is only through well-trained and mature judgment that uniform administration may be attained.

Sorghum Sirup Now Made in Minnesota

Plant near Northern Border Produces Product from Cane

By J. J. Willaman, Ph. D.

Minnesota Agricultural Experiment Station

SENATOR SORGHUM first saw sorghum in the sunny South, but the center of population of sorghum sirup is now swinging to the North. It is no longer a typically southern crop. This does not mean that it is no longer made in the South, but that the commercial article, which finds its way into the regular trade channels, is coming in increasing quantities from a certain spot along the very northern edge of the sorghum-inhabitable region of the country. That spot is Waconia, Minnesota.

Beginning at least 20 years ago as a small "bush" outfit, just like thousands of others throughout the country, it ambled along in a slow way just like the rest of the thousands did. Then it was taken hold of by the two enterprising sons of the owner, who decided they would make or break sorghum sirup for that region. And they have made it.

The New Sorghum Sirup Factory at Waconia, Minn.

It was about 10 years ago that they began their real efforts. Since then the business has passed through the usual sequence of stages. At first the local community, within horse-hauling distance, consumed the output. Then they made enough to supply some of the retailers in the nearby towns. Then they shipped to retailers at greater and greater distances. Finally, now that they are producing far more sirup than can be disposed of in this way, they are talking business to the wholesalers and jobbers. This broadens the territory very considerably, and makes a little mark on the sirup business of the country.

How could this expansion of business take place in the face of the declining popularity of sorghum sirup? As is well known, the present generation does not fancy the

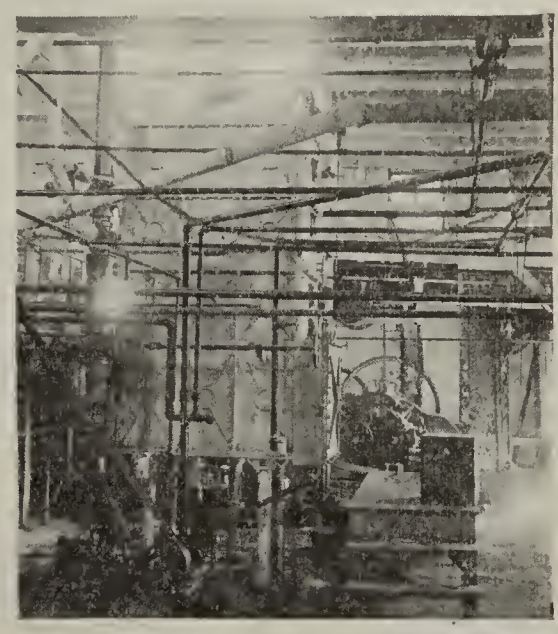
old-fashioned sorghum "molasses," dark, strong, and stringy; modern tastes are more refined and pampered. It was because of these characteristics that the production of sirup dwindled from 28,000,000 gallons in 1880 to 16,000,000 gallons in 1910. The proprietors of the factory under discussion recognized these facts, and also the fact that the sirup would have to be improved, and would have to be of uniform high quality. They, therefore, adopted the experimental viewpoint, and tried out every mechanical and chemical suggestion which came to their notice and which had any promise of usefulness. They visited the sugar mills of the South, and then adopted filtration and vacuum evaporation. They invented and patented a machine for cleaning the cane of leaves and trash. They hired a chemist, and instituted control over the factory processes. They said, "Go ahead," when the chemist suggested putting plant breeding methods on the job to breed up a higher yielding strain of pedigreed sorghum cane; and as a result of two years of effort they can now see very satisfactory progress in the prosecution of the work.

Methods of Manufacture

So, putting all these mechanical and chemical factors to work in the mill, together with lots of faith in themselves and in the sweet tooth of the country, these men are now successfully operating a sorghum sirup plant at the northern edge of the country. They are doing so against all the odds of the weather man, which consist in short-growing season, likelihood of droughts or of excessive rain, and early freeze-ups to shorten the operating period.

They do not sulphur the juice. The juice is defecated by lime and heat, filtered, and condensed in a vacuum evaporator to a sirup. Where the quality of the juice is too low for this simple process to give good sirup, decolorizing carbon is also used. Thus the acidity, density, flavor and color are watched constantly; and this makes for uniformity and good quality.

Because of the climatic odds in that region, the enterprise needs to utilize its by-products carefully. The leaves and bagasse furnish 80 per cent of the fuel requirements. The filter press mud is a good nitrogen fertilizer. The seeds are carefully dried and stored, and sold for seeding and feeding purposes. There is a bushel of seed for each 8 or 10 gallons of sirup.



Vacuum Evaporator Used in Concentrating the Juice to a Sirup.

The attempt to place Minnesota on the sorghum sirup map of the country is being watched with interest by the sirup dealers of the country.

Therapeutic Value of Some Common Foods With Special Reference to Yeast

By RALPH EVERETT LEE, M. D.

THE science of nutrition and dietetics has been immeasurably advanced in the last few years by the discovery that many common foods possess a therapeutic or medicinal value as well as a food value. In fact the curative action in many cases is of far greater importance than the caloric or the tissue building function.

While the recent studies of the relation between food quality and growth, have greatly complicated our conceptions of food metabolism, they have shed a flood of light on the causes and cure of many hitherto obscure conditions, some indefinite such as malnutrition, lack of appetite, general debility, failure to grow, lowered vitality and some very definite diseases such as beri-beri and scurvy and possible rickets and pellagra.

These are all abnormal pathological conditions, all result in premature death and all may be cured or prevented by a change of diet or the addition of foods possessing known therapeutic value. There is no sharp line of demarkation between food and medicine.

The desire for fresh succulent fruits and green leafy vegetables is no mere whim of the appetite but is a natural instinct implanted through ages of selection. The preservation of the race, mental progress and the advance of civilization is not possible without them.

Where these things are lacking a disease known as scurvy lays low its victims with tender swollen joints, soft bleeding gums, loosened teeth, lack of appetite and an ugly ill-tempered disposition followed by a general physical break down.

The Curative Agent

With the juice of the orange added to the food these symptoms rapidly disappear. The patients become more cheerful, the appetite returns, the tenderness of the joints vanishes, the gums harden and the patient is cured. The orange has sugar, but sugar will not cure scurvy. The orange has organic acids, but acids will not cure scurvy. The orange has mineral salts but mineral salts will not cure scurvy. The orange has some protein but protein will not cure scurvy. What then is the curative agent?

Its chemical composition is unknown but pending further investigation it has been given a name; the water soluble C or antiscorbutic vitamine. It is present in fruits, vegetables and raw animal fat, especially that around the kidney and in some of the glandular organs.

It is practically absent in seeds, cereals, beans, lean meat and it is easily injured or destroyed by prolonged cooking.

Infants developing scurvy will almost invariably be found to have been brought up on pasteurized milk. Fresh raw milk will quickly cure infantile scurvy. It is usually necessary to pasteurize milk but infantile scurvy may be avoided by small daily doses of orange juice, tomato or potato water.

Another vitamine known as the fat soluble A is absolutely necessary for growth, and seems more important in the diet of the young. It occurs chiefly in the butter fat of milk and in the green leafy vegetables. The diet of the growing infant should consist almost entirely of milk not only on account of its perfect tissue building protein but also for the fat soluble vitamine it contains. If additional energy is necessary as the child grows older there is no better or cheaper source than bread. "The diet of the American people should be built up around bread and milk."

Until recently a disease known as beri-beri was very prevalent in the far East, and is not uncommon at the present time. In an acute form it is manifested by extreme emaciation or sometimes a sort of dropsy, loss of appetite, low vitality, diminished resistance to disease, sterility, and paralysis beginning in the legs. Cases have been reported from various parts of America. That it is very common in a mild, incipient and generally unrecognized form is shown by the enormous number of cases which show marked improvement in the general health when there is added to the diet foods which have the therapeutic power of preventing and curing advanced cases of beri-beri.

May Be Corrected by Proper Foods

As in the case of scurvy it has been shown that beri-beri is cured by those foods which contain a compound known as the water soluble B or the antineuritic vitamine. However abundant and complete a diet may be if it lacks or is poor in water soluble B there appears, in the young, failure to grow, and in both old and young all the symptoms enumerated above under beri-beri, the severity of the disease depending on the degree of deficiency of this vitamine.

Fortunately for the human race water soluble B is not as easily destroyed by ordinary cooking as the antiscorbutic or the fat soluble vitamines, nevertheless, the increasing use of highly refined, sterilized and artificially prepared foods has placed civilized man on a ration exceedingly low in this necessary factor. It occurs in whole cereals but not in the refined flours. It is found in the sugar beet and cane but is absent in refined sugar. It is not very high in milk, practically absent in meat and fish but abundant in many fresh vegetables such as tomato and spinach.

Hence it is possible for a man literally to starve to death on three full meals a day. The researches of numerous investigators have placed our knowledge of vitamines on a very firm foundation.

Now yeast contains from four to six times as much of this antineuritic vitamine as any other food and it is undoubtedly due to its high vitamine content that this long familiar product possesses such remarkable therapeutic properties.

One of the first symptoms of lack of vitamine, (avitaminosis) is loss of appetite. This is followed by loss of weight, lowered vitality and a whole train of conditions, which might all be brought together under the general term mal-nutrition. This symptom complex, constituting avitaminosis owing to the obscurity and variety of its manifestation in many cases would be difficult to diagnose were there not at hand the ready therapeutic test, namely the administration of fresh yeast. If there is a gradual abatement of the symptoms, the pathological condition is undoubtedly caused by a lack of vitamine. In such cases the administration of yeast is followed in a few days by increased appetite, a better utilization of food, a gradual gain in weight, improved color, and a return of physical and mental vigor and exuberant good health.

Effect of Yeast in the Diet

The administration of yeast can only be attended by good results. It is a microscopic vegetable, a plant that is grown in a water extract of the best selected grains, corn and barley malt from which it absorbs and concentrates the vitamine of the grains.

Besides supplying vitamine, the balance of its substance consists of a readily assimilable food material. Its protein, constituting fifty per-cent. of the dry matter, is available for the building of tissue, its glycogen and fat serve as a source of energy and its ash consists chiefly of phosphates.

The quantitative determination of vitamine in foods is a difficult procedure, and our knowledge of the vitamine requirements of the human organism is very meagre. We only know that enough should be taken to prevent a decline in appetite, weight and general health and that we cannot get too much. That many of us are getting along on less than a minimum amount is shown by the benefits derived in a vast majority of cases by the addition of an ounce to an ounce and a half of yeast to the diet.

Use of Yeast Not New

The use of yeast as a curative agent is not new. It is mentioned by Hippocrates and Galen; and Phiny, the Elder, writing in his Natural History says that the women of Nero's court used yeast to improve their complexions.

The first scientific investigation of its medicinal properties is reported by Moss of England in 1852 and an account of his work appeared in the London Lancet of that year. From that date to the present time numerous articles have appeared in the medical press of every land attesting the therapeutic value of yeast but by far the most careful, painstaking and elaborate piece of work was that done by Hawk and others in the Jefferson Medical School and reported in the Journal of the American Medical Association. They not only prove the value of yeast in cases of malnutrition and allied conditions due to the lack of sufficient vitamine in the diet but also demonstrated, beyond all question the great importance of yeast in the treatment of skin infections, particularly boils, carbuncles and acne. That this almost specific action may not be due entirely to its vitamine content seems possible from the fact that these results are not, so far as we can learn, brought about by other foods merely rich in vitamine.

Research work is now being carried out to determine the action of yeast in these cases and if it should be shown that a food product taken by mouth will actually increase the bactericidal power of the blood it will be a very real and important contribution to medicine.

It was also found that yeast while not in any sense a cathartic aids in the elimination of waste and is an effective remedy in many cases of constipation.

A very definite result of the addition of yeast to the diet is a marked increase of the appetite accompanied by perfect utilization of food both of which contribute to physical and mental well-being.

Yeast Not a "Cure-All"

Yeast is by no means a "cure all," the eating of yeast is not a fad, it should be used with discretion and

good results may be expected in those cases in which it has been proven of definite value. Its relation to the regular diet is analogous to that of orange juice, butter, milk, eggs or bran bread. It fulfills a different but not less important role than these, in that it furnishes in abundance the necessary water soluble B.

Its use is recommended by the majority of physicians in three classes of disorders: as a general tonic in malnutrition and lowered vitality due to insufficient vitamine in the diet, in acute skin infeetions such as boils, acne and carbuncles supplemented when neeessary by appropriate local treatment, and in sluggish action of the bowels.

Yeast has been eaten in bread since the dawn of history and it should be remembered that yeast is a food—not a medicine, that it is better to take yeast as a preventive measure than to wait until some serious disorder makes medicinal treatment imperative.

The advance of civilization in any direction demands constant readjustment of the habits of each individual and the interdependence of apparently unrelated industries is nowhere exemplified more clearly than in the case of the food supply of the nation.

The so-called "deficiency diseases" described above are the results of the failure of the individual to find the proper method of readjustment to conditions which have come to stay.

Widely separated centers of food production and demand have resulted in long transportation and the equalization of distribution throughout the year so that foods gathered in time of plenty can be released when "out of season" have both made necessary longer periods of storage.

The storage of foods has been rendered possible by their constant refinement and purification in the process of which the vitamines have been unavoidably in the case of many foods partly destroyed or removed.

It is imperative that they be replaced and the proper readjustment to meet this condition is in the careful selection of foods rich in these necessary factors.

Butter, whole milk and green leafy vegetables are rich in the fat soluble, growth promoting vitamine, fresh fruits contain the antiseorbutic factor, and yeast, the richest of all vegetable foods in antineuritic properties is the logical source of additional water soluble B.

Colorado Food Official Opposed to Calder Bill

By WILBUR F. CANNON, Commissioner of Foods of Colorado

IN common with other food commissioners who are familiar with the duties of their office, and who are fortunate in having State laws which are in some respects superior to the Federal laws, am most emphatically opposed to the Calder bill. Personally, for the reason that in Colorado we have no variation clause for drugs as is contained in the Federal Act. I am in sympathy with the resolution passed by food commissioners at the St. Louis convention demanding that the variation clause be stricken from the Federal Act. The fact that sub-standard drugs and preparations are permitted in interstate commerce under the variation clause only makes the work of the State official very much heavier, because the substances are quite generally sold as official preparations after they have ceased to be interstate packages. It occurs to me in this regard that it is a miserable travesty upon an act which purports to stop the manufacture of adulterated food or drugs to permit the same to be sold if a confession of guilt is printed upon the package. It is either a pure food law or a correct labeling law, and the general public looks upon it whatever may be the facts as a proteetion to them because it is commonly known as a pure food law.

There are other points of difference between the Federal and State acts, among which this is but one instance.

I am sure it is extremely hard to advise how uniformity can be best brought about between Federal and State acts. Certainly they should not be brought about by the general lowering of the morale of either. The best points of both should be reenacted in both Federal and State statutes. This ean only be accomplished by and through the advice and counsel of men who are thoroughly familiar with the subjects. Certainly if these matters are to be brought about at the instance of the third house, or, the manufaeturing and wholesale interest the bars will be lowered. I believe if it were possible for a committee to be appointed consisting of a fair representation from the Federal departments and a very substantial representation from the states, men who have been long in the service and who have positive ideas of their own which they have acquired by experience, a general bill might be formed which would provide uniformity. There are a few men in the state serviee, such for example as Dr. Crumbine of Kansas, Dr. Frear and Commissioner Foust of Pennsylvania, Dr. Rose of Florida, and some others who would be perfectly competent to do this work.

I certainly think that I voice the sentiment of the members of the State food control officials association when I say that we will bitterly oppose the enactment of the Calder bill, or any method of so-called cooperation which lowers the standard of our various State statutes, and most of us have sufficient influence nationally and in our States to see that this thing is not done.

BRAZILIAN CITY OFFERS MARKET FOR AMERICAN FLOUR

There is a good and growing market in Bahia, Brazil, for American flour. The principal flour merchants of Bahia are placing large orders in the United States, but complain that it takes almost four months to get deliveries from the date of placing orders. The present retail price of flour in Bahia is between $10 and $10.50 per bag of 97 lbs.

During the first six months of the current year 99,212 bags of flour were imported by Bahia, 5,029 bags coming from the United States. The requirements for the coming six months will amount to 100,000 bags.

Prior to the year 1919 practically all of the flour used in Bahia was imported from the Argentine Republic and Uruguay.

Bahia's total flour requirements have been imported from the United States since the recent export embargo placed on wheat and flour by the Argentine Government.

United States Export Trade In Corn Sirup and Corn Sugar

Prepared by the Division of Statistics, Bureau of Foreign and Domestic Commerce

WITH corn the greatest crop in the United States, and a 1920 record yield of 3,199,126,000 bushels of the agerage farm value of 87.3 cents per bushel, according to the Bureau of Crop Estimates, it is of current interest to note the magnitude of the export movement in two of its many by-products—glucose (corn sirup) and grape sugar (corn sugar).

All records were broken in the calendar year 1919 by an aggregate exportation of 255,617,709 pounds of corn sirup and corn sugar, valued at $15,139,944, or an increase of 346 per cent in quantity and of 338 per cent in value over the 1918 shipments of 57,332,150 pounds, invoiced at $3,458,927. Little variation is shown in the average annual export price of about 6 cents per pound from 1918 to 1919. The United Kingdom ranked first as a market for these products, taking 39,345,968 pounds, worth $2,368,015, in 1918, and 159,033,298 pounds, at $9,563,339, in 1919.

From 1918 to 1919, shipments to France increased from 3,984,452 to 52,042,071 pounds; to Argentina, from 1,793,900 to 6,341,204 pounds; and to Italy, from 845,537 to 5,909,980 pounds. Considerable gains are also recorded in the 1919 trade with Belgium, Greece, Canada, New Zealand, the Philippines, British South Africa, and other countries. The Oriental demand is light as compared with that of Europe and Latin America. The detailed exports of glucose and grape sugar, by countries, during 1918 and 1919 were:

Articles and Countries	1918		1919	
Glucose (Corn Sirup)	Pounds	Value	Pounds	Value
Belgium	.....	.....	2,320,043	$128,199
Denmark	79,322	$ 5,148	1,253,640	72,515
Finland	.....	.....	398,520	25,042
France	3,592,452	215,897	42,946,951	2,421,062
Gibraltar	.....	.....	11,250	750
Greece	235,377	16,107	2,392,455	150,597
Iceland, and Faroe Island	.....	.....	6,850	500
Italy	845,537	52,337	5,909,980	364,625
Netherlands	.....	.....	2,587,980	142,001
Norway	.....	.....	1,623,090	99,737
Portugal	.....	.....	122,942	7,213
Rumania	.....	.....	112,000	7,188
Russia in Europe	132	10	.....	.....
Serbia, Montenegro, and Albania	.....	.....	40,800	2,500
Spain	1,366,973	95,035	14,240	898
Sweden	.....	.....	2,334,041	141,783
Switzerland	838,762	63,049	1,814,756	111,788
Turkey in Europe	.....	.....	1,398,200	86,678
United Kingdom	24,746,866	1,454,955	116,660,492	7,078,403
England	.....			
Scotland	977,004	60,805	17,696,108	1,061,015
Ireland	.....	.....	442,687	28,795
Bermuda	.....	.....	9,110	600
British Honduras	1,747	115	789	58
Canada	1,263,724	76,398	2,199,380	128,239
Costa Rica	120,750	6,450	3,450	190
Guatemala	.....	.....	647	57
Honduras	.....	.....	1,611	138
Nicaragua	.....	.....	621	46
Panama	21,395	1,304	6,606	531
Salvador	80	8	125	6
Mexico	188,669	11,502	751,953	47,428
Newfoundland and Labrador	145,092	7,706	196,555	11,782
Barbados	650	40	100	6
Jamaica	2,379	100	8,640	620
Trinidad and Tobago	4,480	290	282	37
Other British West Indies	2,228	141	2,416	148

Articles and Countries	1918		1919	
	Pounds	Value	Pounds	Value
Glucose (Corn Sirup)—Continued				
Cuba	2,154,695	$129,241	2,183,069	$127,923
Dominican Republic	2,273	190	3,600	275

Haiti	.....	.....	55	3
Argentina	1,793,900	104,944	6,289,349	395,314
Bolivia	.....	.....	14	2
Brazil	514,732	31,962	273,342	15,255
Chile	293,332	16,130	515,430	30,790
Colombia	70	6	26,612	1,621
Ecuador	10	1	.....	.....
British Guiana	300	20	4,402	265
Dutch Guiana	159	13	.....	.....
Peru	1,308	98	8,065	494
Uruguay	345,000	20,700	1,766,244	107,496
Venezuela	100	13	234	24
Aden	.....	.....	6,800	493
China	209,349	12,975	470,751	25,024
Chosen	108	10	252	24
British India	122,065	7,201	7,404	524
Dutch East Indies	.....	.....	631	42
Hongkong	129,637	7,799	518,243	31,597
Japan	.....	.....	40,240	3,673
Russia in Asia	.....	.....	10,000	600
Turkey in Asia	.....	.....	75,050	5,005
Australia	5,336	315	.....	.....
New Zealand	103,500	5,175	1,186,168	70,948
Philippine Islands	740,585	41,610	1,457,295	82,813
Belgian Kongo	64	4	66	4
British West Africa	.....	.....	480	49
British South Africa	1,890,275	106,743	2,149,760	139,036
British East Africa	.....	.....	145	16
Egypt	.....	.....	110,250	8,313
French Africa	.....	.....	1,900	253
Total	42,740,417	$2,552,637	220,380,761	$13,169,051

Grape Sugar (Corn Sugar)

Belgium	.....	.....	67,200	3,360
Denmark	.....	.....	298,875	16,653
France	392,000	23,537	9,095,120	468,821
Greece	.....	.....	11,020	772
Netherlands	.....	.....	113,000	6,805
Norway	.....	.....	271,600	13,355
Switzerland	.....	.....	51,750	3,105
United Kingdom—				
England	13,622,098	852,255	22,890,011	1,310,426
Scotland	.....	.....	1,344,000	84,700
Canada	487,541	24,490	551,502	31,958
Costa Rica	.....	.....	170	14
Panama	.....	.....	36	5
Salvador	.....	.....	12,600	945
Mexico	.....	.....	22,962	1,680
Trinidad and Tobago	.....	.....	11,200	532
Argentina	.....	.....	51,855	3,450
British Straits Settlements	90,000	6,000	257,600	12,869
Hongkong	.....	.....	36,952	1,999
Japan	.....	.....	11,200	504
Australia	.....	.....	200	19
New Zealand	.....	.....	60,480	3,326
Belgian Kongo	94	8	.....	.....
British South Africa	.....	.....	77,615	5,595
Total	14,591,733	$906,290	35,236,948	$1,970,893

Industries Utilizing Corn Sirup and Sugar

Corn sirup is a distinctively American product. Though less sweet than cane sugar, it can be used in many ways as a satisfactory substitute therefor. Glucose was discovered about 1800. In this country it is largely used in confectionery and in leather manufacture, in the form of an almost transparent, sirupy liquid composed of dextroglucose, maltose, dextrin, and water prepared from cornstarch by heating with dilute acids. It was formerly used to a large extent in brewing. For converting starch into glucose (hydrolysis), sulphuric acid is generally used. Various forms in commercial demand are "mixing glucose" used by sirup and molasses manipulators; "jelly glucose" for making jellies from evaporated apple juice or other materials; "confectioners' glucose"; "brewers' glucose" used as a substitute for malt in brewing; and "anhydrous grape sugar."

Well-made glucoses are perfectly wholesome, and have a definite food value. It is said that the chief objection to their use in food preparations is due to the fact that the consumer is often misled in regard to the value of the products containing them, as glucoses are often used in the manufacture of inferior or adulterated goods. The manufacture in the United States of corn syrups for table use is highly developed, and there is an increasing domestic demand for various popu-

lar brands of uniform good quality. This demand may be partly due to the proportionately greater increase in the price of cane and maple sugar and sirups since 1917. Normally, in prewar times, the value of cane and maple products greatly exceeded those of corn sugar and sirup, but the relative increase in price of the corn products has been very much less. Cane sugar has sold in this country as high as six times its prewar value, while the price of glucose is only about three times greater. This is apparent in the exports of glucose amounting to 124,140,171 pounds, valued at $2,657,034, in the calendar year 1910, as compared with practically the same quantity, 124,202,985 pounds, exported in the first nine months of 1920, invoiced at $7,806,101.

Years	Glucose		Grape Sugar	
	Pounds	Value	Pounds	Value
1910	124,140,171	$ 2,657,034	46,791,855	$ 937,391
1911	146,643,655	2,953,120	45,249,422	878,841
1912	134,842,547	3,256,550	40,328,283	966,383
1913	165,551,073	3,760,203	40,641,718	906,881
1914	127,201,099	2,895,189	35,681,124	775,036
1915	151,487,376	4,107,547	36,842,686	945,238
1916	136,379,198	3,295,823	38,684,528	993,478
1917	152,076,927	7,158,670	25,765,875	961,908
1918	42,740,417	2,552,637	14,591,733	906,290
1919	220,380,761	13,169,051	35,236,948	1,970,893
1920a	124,202,985	7,806,101	9,918,320	618,897

a Nine months ending with September.

Variations in Export Trade During Last Decade

It will be noted from the following table that while the export trade in glucose (corn sirup) has been greatly extended during the last decade, 1910 to 1920, that in grape sugar (corn sugar) declined in quantity from 46,791,855 pounds in 1910 to 35,236,948 pounds in 1919, but increased in value from $937,391 to $1,970,893 in the same time. A still further decline in the exports of grape sugar occurred during the first nine months of 1920—9,918,320 pounds, valued at $618,897, as compared with 24,590,745 pounds invoiced at $1,321,119 in the corresponding period of 1919.

The combined exports of glucose and grape sugar for the nine months ending September, 1920, are 134,121,305 pounds, valued at $8,424,998, or an average export price for this period of 6.3 cents per pound. Corresponding exports in 1919 were 194,681,907 pounds, invoiced at $11,082,078, or 5.7 cents per pound.

Domestic Production

According to the census of 1914, there were 7 establishments making glucose, employing 2,729 wage earners (average number); the cost of materials used was $29,909,655; and the value of the products $38,619,383, of which the value added by manufacture was $8,709,728.

Bibliography on Corn and Its Uses

The National Research Council, of Washington, D. C., has just issued an extensive list of references to investigations upon the production of corn and its uses, prepared by M. Helen Keith of the Illinois Agricultural Experiment Station. The list includes over 1300 articles which have been published within recent years in this country and abroad. The investigations referred to in the list cover a wide range of problems such as the breeding and growing of corn as affecting its yield and nutritive qualities, the curing of corn and the preparation of silage, the systematic feeding of farm animals, the physiology of corn nutrition, including its relation to pellagra, the chemical composition of corn, and the extraction of such products as iodine, chloroform, oils, alcohol, and benzine. Altogether the list shows that the scientific investigation of all phases of corn problems has become exceedingly extended and important.

This Bibliography is divided into three sections. Section I consists of a list of the full titles and citations for all articles found and for all published abstracts of these articles. These references are arranged alphabetically according to authors' names, and chronologically for each author.

Section II contains a minute classification of references to the articles listed in Section I.

Section III consists of a list of books and articles of a general nature in the field of corn nutrition.

The following is the table of contents of the bibliography:

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Author Bibliography

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Subject Bibliography

A. Studies of corn or corn products not involving experiments upon animals.

I. Analytical determinations other than proximate analyses: acids and acidity, alcohols, alkaloids, amino acids, aqueous extract, ash, benzine extract, carbohydrate constituents, carbon, chloroform extract, enzymes, ether extract, fats, iodine, lecithin, nitrogen, pentosans, phosphorus, pigments, proteins, sugar, sulphur, toxic substances.

II. Conditions affecting the composition of corn; breeding, detasseling, ensilage, fermentation, fertilizers, geographical varieties, germination, planting, milling, removal of cob, tops or leaves, soil moisture, stages of growth, starch, steaming, storage, weather effects.

III. Energy values.

IV. Enzymic digestion.

V. Special studies of corn oil.

VI. Special studies of corn proteins.

VII. Special studies of corn starch.

VIII. Special studies of corn sugars.

IX. Breakfast foods made from corn.

X. Processes and agents working in silos.

XI. Other studies not involving experiments upon animals.

B. Studies of corn or corn products involving experiments upon men or animals.

I. Feeding tests not involving chemical considerations (not including coefficients of digestibility or the balance between intake and outgo); beef and dairy cattle, fowls, hogs, horses and mules, sheep and goats.

II. Digestion experiments with corn products (in which coefficients of digestibility are determined): cerealine feeds, Chicago maize feed, corn meal, corn-and-cob meal, bran, chopped feed, fodder, corn germ meal, oil, proteins, shucks, silage, starch, stover, distillery grains and refuse, gluten meal, hominy, corn as human food.

III. Balance experiments (in which the balance between intake and outgo is determined): Man, cattle, hogs, horses, lambs, laboratory animals, birds.

IV. Special studies of conditions effecting the nutritive value of corn: curing, decortication, digestibility, ensilage, freezing, grinding, heating, planting, milling, molding, soaking, stage of growth upon cutting, storage, stover, varieties, wind scorching.

V. Observations bearing upon specific effects of the chemical compositions of corn: acidity of ash, calcium defect, cellulose defect, other mineral defects, pigments, protein defects, vitamines.

VI. Observations on specific physiological and anatomical effects of corn or corn products: body lesions, body resistance, composition of parts of the body, digestive disturbances, metabolic processes, milk production, nervous system, offspring, reproductive powers, growth and weight, length of life, pellagra, toxic effects.

VII. Other types of studies with animals.

SECTION III

Selected books, pamphlets, and general articles.

This "Bibliography of Investigations Bearing on the Composition and Nutritive Value of Corn and Corn Products" has been mimeographed for limited distribution (xiii X 178 pages), and may be purchased from the Research Information Service of the National Research Council, 1701 Massachusetts Avenue, Washington, D. C., price $2.00.

Foreign Trade Importance to the Packer

By Thomas E. Wilson
President of Wilson & Company

WE WERE given a forceful demonstration of the importance of foreign trade in the meat industry in 1919. Then both the meat packers and the producers of the United States saw millions of dollars of their money slipping away from them in lowering values due to unstable conditions in European countries which seriously impaired their purchasing ability. The Central Powers suffered most for when nothing had been done to assist them in their financial reconstruction their purchasing power was virtually ended. The latter especially were looked to, by us, to take millions of pounds of pork products accumulated on a high market but their failure to obtain credits eliminated them as purchasers. This resulted in such rapid declines in the values of the products on hand that the packers and producers lost millions of dollars in decreased values in a brief period beginning in July, 1919.

Anything which affects the foreign rate of exchange naturally affects our business just as much as it does any of the other vast industries of our nation. When Great Britain and France find their currency at a discount in this country their purchasing power naturally then is decreased and their buying power lessened. This lessened purchasing power in turn means restricted imports and if our nation decreases its exports, there must result most naturally a noticeable decrease in production of both raw and finished materials.

In the meat industry the immediate effect of the decline in the foreign exchange was to prevent an outlet for the increased numbers of meat animals which the producers of the nation had raised to meet a situation, which, they had been advised, warranted them in raising more live stock on high-priced land and feed. When they saw their profits being swept away by the decline on the markets they became discouraged and began restricting production. This restriction will be felt later in our markets.

The consumer benefited greatly by this decline in the price of fresh meats but the advantage can only be temporary. Just as soon as the effects of curtailing production is felt on the live stock markets there will be a shortage in available meat animals and the demand for them will send the price up to higher levels. This will result in another unsatisfactory situation but it is something over which neither the producer nor packer can exercise any control.

Our export business should act somewhat as a balance to our industries and everything should be done to keep foreign trade channels free from anything that will congest open trade with European countries.

Foreign business does not alone benefit the producer and the packer by helping to stabilize his markets. It goes much further for as it readily can be seen, anything which increases the output of packing plants naturally increases the payrolls and adds to the packers' ability to buy more live stock. The result is to keep labor better satisfied by steady remunerative work. Also the live stock producer feels he will have a market for his meat animals which justify his expense in raising them. It is always desirable to keep packing plants operated at a maximum that will assure the absorption of all meat animals offered for sale. Meat animals when ready for marketing cannot be profitably carried over and best results can be obtained for all when markets are cleared of offerings. Naturally, this will result in better prices being paid for live stock and, when the producer receives a fair return to which he is entitled, he is encouraged and raises more live stock. This in turn helps the entire situation and must benefit each and everyone of us.

There has been a tremendous increase in exports of meat products since 1914, and while statistics usually are dry and uninteresting, there is nothing more convincing than a comparison of exports in our lines between 1914 and 1918—the first and last years of the war.

These estimated figures are taken from a report recently issued by John Roberts, of the editorial offices of the Bureau of Animal Industry, U. S. Department of Agriculture and are as accurate as may be obtained.

The comparative figures are as follows:

Meats	1914 Pounds	1918 Pounds
Beef, Canned...	30,734,748	141,447,163
Beef, Fresh....	31,422,463	514,341,529
Beef, Pickled, etc.	23,779,449	44,208,020
Pork, Canned ..	2,786,415	5,267,342
Pork, Fresh....	1,250,977	11,632,260
Pork, Pickled, etc.	37,006,108	36,672,260
Bacon	184,267,850	1,104,788,081
Hams and Shoulders ...	142,398,301	537,213,041
Mutton	3,847,093	1,630,815
Sausage	5,092,436	12,380,192
All other Canned	12,730,230	44,100,000
Total Meat...	475,316,070	2,453,681,078

In the item of fats there was likewise a large increase shown. In 1914 the total number of pounds exported of animal fats, including lard, neutral lard, lard oil, oleo oil, tallow and stearine, amounted to 558,944,199 pounds, and in 1918 this was increased to 639,352,823 pounds.

Further light is thrown upon these figues when a comparison is made between the total production of dressed meats and the amount exported.

In 1914, 14,039,302,000 pounds of meat were produced, of which amount 13,887,460,000 pounds were consumed at home and 475,316,000 pounds were exported.

In 1918, 18,041,166,000 pounds of meat were produced, of which amount 15,797,162,000 were consumed at home and 2,453,881,000 were exported. Included in these figures are 323,474,000 pounds of meat imported in 1914 and 209,677,000 pounds imported in 1918.

In a February, 1920, bulletin, commenting upon the foreign situation as it affects the interests of its members, the Institute of American Meat Packers, composed of about 200 of the leading meat packers of the nation, said:

"The export trade of the packing industry, which is the largest industry in America, has practically ceased. The significance of this fact will be apparent when it is remembered that the United States normally exports a considerable

(Concluded on page 30)

Margarine Production Shows Steady Increase

War Has Brought Greater Consumption While Butter Output Has Declined

By J. A. ABBOTT,

Secretary, Institute of Independent Margarine Manufacturers

FOR many years the production of margarin has been steadily increasing and the production of butter has been steadily decreasing or at a standstill in the United States. There has been very little change in the production of vegetable and animal fats and oils. The following figures have been obtained from Federal Government officials and reports:

Years	Pounds
Margarin	
1912	128,000,000
1914	144,000,000
1915	146,000,000
1916	152,000,000
1917	233,000,000
1918	326,000,000
1919	359,000,000
1920	400,000,000
Creamery Butter	
1912	700,000,000
1914	770,000,000
1915	780,000,000
1916	760,000,000
1917	742,000,000
1918	793,000,000
1919	851,000,000
1920	800,000,000
Farm Butter	
1912	960,000,000
1914	844,000,000
1915	?
1916	880,000,000
1917	733,000,000
1918	777,000,000
1919	850,000,000
Animal Fats and Oils	
1914	1,568,000,000
1918	1,838,000,000
Vegetable Oils	
1914	2,455,000,000
1918	2,308,000,000

The importation of butter has never exceeded 10,000,000 pounds and the exportation has never exceeded 35,000,000 pounds per annum. The exportation and importation of margarin are likewise so small that they are negligible quantities. The production of whey butter and renovated butter are likewise negligible, never exceeding more than about 20,000,000 pounds per annum. The production figures of margarin and butter given above therefore represent the consumption of the two products in this country. This country annually exports 1,000,000,000 pounds and imports 700,000,000 pounds of animal and vegetable fats and oils. Most of these products are used for food in the form of lard, lard compounds, salad oils, and margarin.

Use of Margarin Steadily Increasing

It is not the purpose of this article to attempt to make an analysis of the multiplicity of economic phases of this subject. It is obvious that the use of margarin is steadily increasing and will of course continue to increase for the following reasons:

1. The price of good butter is double that of margarin.

2. The digestibility and food values of margarin and good butter are almost if not altogether the same. According to Luhrig, the coefficients of digestion (the digestibility) of butter and margarin are practically the same. According to Lusk and the U. S. Department of Agriculture, their food values, measured in terms of the usual unit of measurement, are practically the same. The United States food leaflets issued by the U. S. Department of Agriculture and the U. S. Food Administration contain numerous recipes for dishes in the preparation of which margarin, butter, or other fats and oils are recommended. Between April 7, 1917, and May 1, 1919, the War Department shipped 18,382,221 pounds of margarin in Europe for the use of the American Expeditionary Forces. There were 8,826,846 pounds of butter and 31,354 gallons of cottonseed oil sent there for the same purpose. According to the British Medical Journal, August 3, 1918, "fats have staying qualities, being absorbed in about six hours after eating. Carbohydrates are absorbed in about three hours. Too much carbohydrate food results in fermentation and digestive disturbances. Man cannot work well on an empty stomach. The Germans did not have sufficient fats during the war. Their fat ration in towns was 1½ pounds per month. Certain diseases attributed to this short ration were cured by increasing the fat ration."

3. The flavor, texture, shape, and consistency of good butter and margarin are practically the same. Margarin is made of milk and some kind of wholesome animal fat or vegetable oil, or both. The animal fats used in its manufacture are oleo oil, neutral lard, and butter fat. The vegetable oils are chiefly those of cocoanuts, peanuts, and cotton seed. The butter flavor of margarin is derived from the ripened milk in which the fats and oils are churned. Ripened milk is also the source of the butter flavor of butter. The fatty portion of butter, when separated from butter, has very little if any butter flavor or taste.

4. Much of the butter produced is of inferior quality. Poor butter is not in a class with margarin. In making the above comparisons only good butter has been indicated. The Chicago Dairy Produce, October 26, 1920, states, "That but 5 percent of the total creamery butter manufactured will grade extras; 10 percent, a *good first.*" The remaining 85 percent is poorer in quality, "40 percent goes under (a score of) 88 in a class of seconds and lower."

5. In general the production of margarin is carried on under Federal Government inspection or supervision. A Federal inspector has an office in every margarin factory in which any animal fat or oil is used. Nearly every factory makes such a type of margarin as well as the nut margarin type. The result is a clean wholesome product made in an establishment under sanitary surroundings approved by the Federal Government. There is no such supervision over the manufacture of butter.

6. During the recent war millions of people had to eat margarin or nothing. They ate margarin and found out what it is—its flavor, palatability, composition, food value, and the sanitary methods of its manufacture. They are now eating it from choice and not from necessity.

The above facts account in large measure for the rapid increase up to this moment in the production and consumption of margarin and

for the permanency of the industry in America.

As was stated above, about 400,000,000 pounds of margarin are eaten in this country annually. That is about four pounds per capita. The people of Denmark have for many years been eating about forty pounds per capita, or ten times as much as the people of the United States. Notwithstanding this fact, they eat about the same quantity of butter that we do, viz., about 16 or 17 pounds per capita, England, France, Belgium, Holland and the other European countries likewise eat much more margarin than the people of this country. According to The Market Reporter of the U. S. Department of Agriculture margarin now represents 75 percent of the edible fats consumed in England.

Had it not been for legislation affecting the margarin industry, it would have been on its feet a long time ago. Between 1880 and 1885, Missouri, New York, Pennsylvania, Maine, Michigan, Minnesota, and Wisconsin passed prohibitive margarin laws. The sale of margarin was prohibited in those States. These prohibitive laws were declared unconstitutional after the passage of the Federal margarin law of 1886.

Most of the States prohibit the sale of colored margarin. The Federal government taxes it 10 cents per pound; the manufacturer of it is taxed $600, the wholesale dealer in it $480, and the retail dealer in it $48 per annum. Butter may be colored anywhere and is not taxed anywhere. Many States also impose a tax on dealers in margarin. No taxes are levied on butter dealers anywhere. Such legislation is contrary to good governmental policy for it helps one agricultural industry by penalizing another agricultural industry operating under the same flag. It is not believed that the rank and file of the dairymen of America are in favor of such class legislation. The first time they ever had a chance to express themselves on such measures, they showed what kind of stuff they are made of. The Oregon Legislature passed a bill last year imposing further burdens upon the margarin industry. A "referendum" on the bill was ordered. On Nov 2, 1920, the sovereign voters of that dairy State overwhelmingly defeated the bill, thereby repudiating the acts of their representatives in their legislative body. Instead of penalizing such an industry, legislative bodies should have encouraged those who have put the fats of our herds and fields into such a palatable and wholesome form as margarin is today.

If the margarin industry has been responsible for a decreased consumption of butter to the point of waking up the dairy industry, it deserves the plaudits of humanitarians everywhere as well as the thanks of the dairymen themselves; for it has compelled the dairymen to quit the absurd habit of producing milk simply for the price of the butter fat which it contains. The skim milk from which butter fat has been removed is more valuable as food than the butter fat itself. Producing milk, therefore, simply for butter fat, throwing away the skim milk or feeding it thoughtlessly to scrubby livestock, has been more hurtful to the dairy industry than twice the competition it will ever receive from the margarin industry. It appears that these facts are now appreciated by the dairy industry for on every hand may be seen and heard the slogan "Drink More Milk." Such a slogan is sane and has a sound economic and scientific basis. It will get them somewhere. The slogan, "Down With Margarin," which has been the cry of a few hopelessly envious souls, is without a sound economic or scientific basis. It will get them nowhere. It will be a boomerang to those who have used it as soon as the facts of margarin as a food are known.

Zoning System In San Francisco To Check Food Waste

Use of a zoning system to eliminate waste in the distribution of foods to the consumer is being planned by the Consumers' League of San Francisco.

Aaron Sapiro, attorney for fourteen co-operative organizations of food producers on the Pacific coast, said in an interview that co-operative organization among producers is the only salvation of the food consumer.

"However," he declared, "co-operative food producing organization must be by commodity instead of by territory. We have proved that conclusively on the Pacific slope. What I mean by commodity organization, is societies of orange growers, almond growers, prune growers, etc., each independent of any other class of food growers. That plan gives pure co-operation, centralized efforts in each line, and gives, in addition, a merchandising policy instead of a dumping policy.

"We are approaching that same policy in San Francisco now from the other end, the consumers' end, and it is taking hold wonderfully. The secret of true co-operation among consumers is elimination of waste in food handling and proper merchandising. The average grocer is not a profiteer; as a matter of fact he is not netting so much money as the bricklayer. We have found that out in San Francisco—and we have also found out the why of it.

"In that city are 1,200 groceries, or one to every eighty families. There is an enormous duplication. One good store can serve 600 families, we have found. Some actually are serving well 1,000 families. San Francisco, for efficient service, should have no more than 200 groceries instead of 1,200. In one part of the city, in two blocks, there are seventeen groceries. Not one of them can adopt a real merchandising policy; there is too much duplication. The consumers in those two blocks are paying the overhead of every one of those seventeen stores; they should be paying for only one store, two at most.

"In co-operative marketing we have found that the grower can take care of all waste between himself and the wholesaler by having his own marketing system. But the consumer is the only person who can care for waste between the wholesaler and the consumer.

"In our plan we are zoning the city for the placing of 150 to 200 stores. This we know will give the consumer a 25 per cent saving directly upon his retail purchases. Furthermore, we are working out a merchandising system whereby overproduction of perishable foods can be placed before the consumers at the least possible cost and without loss to the producer."

Wheat Flour Production More Than 120,000,000 Barrels Annually

Federal Trade Commission Issues Report After Full Investigation of the Industry

The Federal Trade Commission has completed its report on the wheat flour milling industry and has transmitted it to Congress. The inquiry has its origin in connection with the general food investigation made by the commission, but was later continued as a separate inquiry. The report is given herewith.

THE wheat-flour milling industry has long been one of the most important in the United States. The value of its flour output alone, in the eight months ending with March, 1920, considerably exceeded a billion dollars. The growth of the industry has been relatively slow, however, for many years. In 1899, the mills produced a little over 100,000,000 barrels of flour; in 1919 about 120,000,000 barrels. While the wheat-flour output increased less than 20 per cent, population grew at twice that rate, cotton used by the cotton mills of the county more than doubled, and there was a threefold increase in the production of pig iron.

Although there are still thousands of small neighborhood mills in the United States, and although the largest milling concern in the country has never produced much, if any, over 10 per cent of the total output, the tendency toward concentration in the wheat-flour industry is notable. The crowding of consumers into limited areas incidental to the great industrial development of the country has created a situation in which a demand for standardized brands of wheat flour has been developed. Such flour can be produced successfully only by milling concerns of large size whose wheat supply enables them to maintain the quality of their flour practically unchanged from year to year. Concentration has been further advanced by the increased production of hard wheat on the high plains west of the Mississippi River. The flour made from this wheat by the western mills satisfies the demands of consumers in the great industrial centers much more fully than does the flour produced from the soft wheat grown in other sections of the country. The low price of wheat produced in the Pacific Northwest has also developed a surplus output of wheat flour in that section, which finds its market principally in California and abroad.

Ten Largest Mills Produce Half of Total Wheat Flour

This concentration in the wheat-flour industry has already progressed so far that 10 of the larger milling concerns probably have sufficient capacity to produce over half of the wheat flour used in the United States. Its rate of progress in recent years is indicated by the fact that in the 10 years from 1904 to 1914, according to census statistics, one out of every three mills having an annual output of 5,000 to 20,000 barrels went out of business, their number decreasing from 2,123 to 1,377. On the other hand, the number of mills making over 100,000 barrels increased from 166 to 218, their output in 1914 amounting to over 60 per cent of the total for the entire country.

During the twenty years ending with 1914 the price of wheat flour did not advance nearly so much as the average price of other commodities. According to census statistics, the average value of wheat flour at the mills in 1889 was $4.33; in 1899, $3.35; and 1909, $5.20; but in 1914 it had dropped back to $4.67. In the five years from 1913-14 to 1917-18 the average price of flour sold by the companies covered in the present report increased from $4.15 to $10.22 per barrel—an advance of 146 per cent. During the same period, according to estimates of the Department of Agriculture, the average price received by farmers for wheat advanced 160 per cent, while price data of the Department of Labor indicate an increase of only 118 per cent in retail prices of flour. It should be noted also that for the same companies the millers' combined receipts for flour and feed increased only 134 per cent. The wholesale price of flour has continued to increase, and by the end of 1919 its advance over the low level of the nineties was relatively greater than the average advance for all other commodities. Furthermore, the retail price of flour advanced during 1919 at practically three times the average rate for other foods.

Incomplete data gathered by the commission indicate that up to 1918 profits of flour jobbers, including proprietors' salaries, ranged from 10 cents to 20 cents per barrel, but that many jobbers probably made twice their ordinary profit in 1917. The average expense in jobbing a barrel of flour apparently increased from about 25 cents before the war to about 40 cents in 1917 and 1918.

Inquiry Limited to 37 Companies

The circumstances under which this inquiry into the wheat-flour industry was carried on made it advisable to limit the report largely to the operations of 37 companies whose annual sales in 1913-14 amounted to 38,450,000 barrels, in 1915-16 to 48,430,000, and in 1917-18 to 34,659,000. Their sales, however, are so widespread and are such a large factor in the interstate flour trade that their prices may be taken as representative of commercial milling operations throughout the United States. Ten of these concerns included in what is referred to hereafter as the Northwestern group used hard spring wheat almost exclusively; 13 in the Southwestern group used hard winter wheat for 85 per cent of their output, and 14 in the Eastern group divided their consumption quite equally between hard and soft wheat.

The accounting records, even of the 37 selected companies, were not found to be wholly satisfactory for use in determining past developments or present conditions in the industry. After careful revision it was possible, however, to obtain figures for the 37 companies and for the different groups referred to above which can be used with confidence in comparing different years and different groups of companies.

On flour sales amounting to $159,656,875 the 37 companies made a profit of $5,512,163 in 1913-14, and in 1917-18 on sales amounting to $354,192,287 their profit was $22,440,858. (After this report went to press the Commission learned that $1,297,384.05 of this $22,440,858

was paid to the Grain Corporation as excess profits). The rate of profit on sales increased from 3.4 per cent in 1913-14 to 6.5 per cent in 1916-17 and dropped back to 5.3 per cent in 1917-18. The decrease in the last year was due in part to sales to the Government at less than cost.

This remarkable development of the business of the 37 companies resulted in an increase in their investment from $43,460,780 at the beginning of the five years to $69,528,605 at its end. These concerns not only made this increase of 60 per cent in their investment but also paid out $36,716,403 in dividends and Federal taxes and for outside investments.

The average annual earnings of the Northwestern group on its average investment for the five years were 24.4 per cent; those of the Southwestern 23.5 per cent; but those of the Eastern group amounted to only 15.8 per cent. The profit of the 37 companies was over twice as large in the last two years as in the first three. In 1916-17 their return on investment, 38.4 per cent, was over three times as large as in 1913-14. In the single year 1916-17 the profit of the Northwestern group amounted to 44.7 per cent and in 1917-18 that of the Southwestern group was 42.6 per cent. In striking contrast with these figures, the earnings of the Eastern group in 1915-16 were only 6.5 per cent. In 1917-18, however, the profit of that group had increased to 30.8 per cent.

Production Costs More Than Doubled

Segregating wheat-flour costs from costs of other products as accurately as possible, and allowing a credit from feed sales of 76 cents in the first year and $1.29 in the last, the cost per barrel of flour for the 37 companies increased from $3.99 in 1913-14 to $9.68 in 1917-18. In the first year mentioned this cost included $3.96 for wheat and 79 cents for all other items and the last year $9.72 for wheat and $1.25 for other items. The increase in cost of wheat was $5.76 and that in the cost of all other items 46 cents. The cost of wheat advanced 146 per cent during this period, packages 74 per cent, mill operating costs 68 per cent, and general and selling expenses 37 per cent. This great increase in the cost of wheat is explained largely by the fact that the average crop in 1916 and 1917 was practically 400,000,000 bushels smaller than that in 1915 and that, in spite of greatly decreased exports, wheat on hand at the end of the crop years fell off 122,000,000 bushels in 1916-17 and 34,000,000 bushels in 1917-18. On July 1, 1916, estimated stocks of wheat in the United States amounted to 177,000,000 bushels and two years later to only 21,000,000 bushels.

Until 1917-18 miscellaneous milling was a negligible factor in the operations of the 37 companies, but on account of their increased output of coarse grain products in that year a satisfactory separation of wheat-flour investment from the increased miscellaneous milling investment would have been desirable but was impossible. Therefore, wheat-flour profits and miscellaneous milling profits were necessarily combined in ascertaining the rate of return on investment for that year. Average investment per barrel for the 37 companies thus determined increased $1.14 in 1913-14 to $1.90 in 1917-18 and profit per barrel from 14 cents to 65 cents.

In 1913-14 the per barrel investment of the Northwestern group was 14 per cent below and that for the Eastern group 53 per cent above the average for 37 companies but in 1917-18 the investment for the Northwestern group was only 6 per cent below and that for the Eastern group only 14 per cent above. The investment for the Southwestern group held an intermediate position in all years. Costs and prices per barrel for the different groups showed this same tendency to approach each other during the five-year period.

The data used in this report on the whole seem to indicate that milling companies of less than 300,000 barrels' annual output are relatively less profitable than the larger companies. Among the companies having an output over 300,000 barrels, those with an output below 1,000,000 compare favorably with those having an output in excess thereof.

Cold Storage Research In Great Britain

THE British Department of Scientific and Industrial Research, in an official report for the year 1919, describes completed experiments of the Meat Committee of the Food Investigation Board upon the freezing of beef. "It is a remarkable fact, familiar to the industry," the committee points out, "that whereas mutton can be frozen without damage, beef can not. The effect of freezing on the latter is so to alter the muscle substance as to cause the meat, on thawing, to exude a fluid rich in nutritive material and colored with hæmoglobin." The new experiments prove that, provided certain precautions are taken, beef can be frozen in such a way as to preserve completely the physical and chemical qualities of the fresh meat. The experiments were carried out with small pieces of beef, and the committee states that subsequent attempts to repeat them on a commercial scale have so far failed for lack of adequate apparatus.

Nitrogenous Autolysis of Beef and Mutton

"The question whether the difference in the behavior of beef and mutton when subjected to the process of cold storage could be explained in terms of a biochemical difference in the tissues is obviously at the root of the matter," the report avers, and this was the first subject of investigation. The results obtained show that, while beef and mutton do differ in certain chemical qualities, the differences do not provide an explanation of the different physical properties alluded to above. "This is encouraging," the committee declares, "for, though it may be possible to control secondary physical changes, it would manifestly be impossible to alter fundamental chemical characters." Continuing, the committee says:

Fresh mutton is characteristically more acid than fresh beef and the distribution of nitrogen is different, but the most striking difference lies in the autolysis of the tissues of the two animals. In the case of fresh beef and mutton, nitrogenous autolysis—that is to say, the intrinsic chemical change which follows on death, considered only with reference to the distribution of nitrogen—comes to a stop in seven or eight

days at room temperature. The form of the curve of change is, however, different for the two animals and the final equilibrium so characteristic as to afford a means of differentiation between the meat of the two species.

Rapid Freezing Essential

These relations, characteristic of fresh meat, are completely upset by the relatively slow freezing which occurs in air at, say, —10° C. The rate of change is altered and the chemical breakdown much more drastic. Instead of coming to an end in 7 or 8 days, there was no sign of the characteristic equilibrium in 16 days, the longest period during which the meat was kept under observation.

Experiments on a small scale (with pieces of a few pounds in weight) showed that when beef is frozen sufficiently rapidly, e. g., by immersion in brine cooled to —20° C., the characteristic propensity to drip on thawing was eliminated. Attempts were made to reproduce these results on a commercial scale by using quarters of beef, but the plant at the disposal of the workers was not powerful enough to remove the heat sufficiently rapidly. It was noticed in the course of these experiments that immersion in brine led to the natural fresh red color of the beef deteriorating rapidly when it was thawed. The samples usually appeared a dull and rather dirty purple. This discoloration was found to be due to the conversion of hemoglobin into mæthoglobin.

It was also found that by careful regulation of the composition of the brine this change did not take place, the beef retaining its natural bright color. It may be said, therefore, that the freezing of beef so that the product on thawing behaves chemically and physically like fresh beef, and retains its natural color, is possible. It remains to be seen, however, whether it is feasible as a commercial process. The Food Investigation Board has made arrangements for carrying out the necessary experiments on a commercial scale.

Investigation of Molds That Infest Meat

The systematic and biological investigation of the molds that infest coldstored meat have been continued, and considerable progress has been made. Notwithstanding the fact that the same molds occur repeatedly a large number of forms have been isolated, some of which are new to science. All these molds are confined to the superficial layers of the meat, none of them being able to penetrate the tissues deeply. Special attention has been directed to the "black-spot" contamination of beef and mutton. It is now clear that this trouble is exclusively due to one or more species of *Cladesporium,* a genus of world-wide distribution the members of which grow chiefly upon dead vegetable tissue.

Inquiry is being made into the nutritive and physical conditions under which these molds develop. Although there has been a belief in the trade for some time that certain of them would develop under cold-store conditions, there has always been some doubt as to whether they were not due to some temporary breakdown of the plant during storage either on board ship or elsewhere. It was, therefore, important to perform critical experiments to ascertain whether any of these fungi would develop under uniform cold-store conditions. This has been done, and it has been shown conclusively that the fungus causing "black-spot" will grow and produce spores at a temperature at least 5° C. below freezing point. This fungus develops more readily at low temperatures if, before being placed in the cold, the meat or artificial medium inoculated with the spores is kept for 24 to 28 hours at ordinary temperature, thus allowing the early stages of germination to take place under normal conditions. Growth is very slow at these low temperatures, but it is greatly enhanced if the temperature is raised to 0° C. So far the "black-spot" fungus is the only one found to grow at a temperature considerably below 0° C., but several develop fairly well at freezing point.

Nutritive Value of Dried Blood

Among other experiments completed were trials of the nutritive value of dried blood. This research may be described as part of the war work of the board rather than as being comprised in its normal activities. At the time of the great shortage of pig foods it was considered advisable to test the effect of the addition of dried blood to such foods as were available. Experiments were carried out at the Animal Nutrition Station, Cambridge, on 28 pigs. What might be called ordinary commercial diets were used, to which dried blood was added in amounts varying from 2 ounces to 6 ounces per pig per day. The following figures show that pigs fed on a diet to which dried blood was added made a decided gain in weight above that of pigs on similar diet but without the blood. Each pen contained seven pigs.

Pen	Diet	Result after 11 weeks
1	Wheat offals only	Gained 15 stone, 7¼ lbs.
2	Maize meal only	Lost 3¼ lbs.
3	Wheat offal and dried blood	Gained 20 stone, 3¾ lbs.
4	Maize meal and dried blood	Gained 14 stone, 11¾ lbs.

PRODUCTION OF FATS AND OILS

The factory production of fats and oils (exclusive of refined oils and derivatives) during the three-month period ended September 30, 1920, as compiled by the Bureau of the Census, was as follows: Vegetable oils, 250,289,451 pounds; fish oils, 26,244,350 pounds; animal fats, 343,000,091 pounds; and grease, 79,791,840 pounds; a total of 699,325,732 pounds. Of the several kinds of oils and fats covered by the inquiry the greatest production, 271,563,430 pounds, appear for edible and neutral lard. Next in order are linseed oil with 126,137,706 pounds; tallow with 69,883,625 pounds; cottonseed oil with 51,875,320 pounds; and coconut oil with 33,607,312 pounds.

Nearly all the crude vegetable oils are passed through a refining process, although some virgin oil is expressed. The production of refined oil during the three-month period was as follows: Cottonseed, 51,523,813 pounds: coconut, 36,547,190 pounds; peanut, 25,390,184 pounds; soya-bean, 7,810,319 pounds; and corn, 21,248,547 pounds.

SWISS CHOCOLATE, MILK, AND CHEESE EXPORTS

Switzerland's export of chocolate, an industry particularly thriving in the Berne consular district, reached beyond the pre-war value during the first half of 1920, namely, 23,711,464 Swiss francs (1 franc=$0.193 normally; but the quantity, 3,962 metric tons of 2,204 pounds each, was only about 500 tons more than half of that exported during the first six months of 1913. The export for the first half of 1913 was 6,897 tons, valued at 23,583,694 francs. Condensed milk export reached not quite half of that of the first semester of 1913, the figures being, respectively, 8,773 and 19,236 metric tons. It is worthy of mention, however, that the 8,773 tons attained a value about equal to the 19,236 tons, the amounts being 20,799,146 and 21,700,000 Swiss francs, respectively. The export of cheese for the first half of 1920 was 623 metric tons amounting to 3,845,885 francs.

The Importance of Foreign Markets to the Dairy Industry

By DWIGHT E. AUSTIN
Managing Director, Nestle's Food Company

THE source of a nation's prosperity is necessarily in its trade. For the comforts of its citizens domestic and import trade are necessary, but for the sale of its surplus it must look beyond its borders. Who are interested in the development of exports? What must follow an even distribution of a nation's products? Prosperity—all citizens—the whole nation are interested—for through a large export trade an even distribution of a nation's products is possible, and this results in prosperity.

In its export business, as in its domestic trade a nation finds employment for its people, use for its transportation equipment, its raw materials and its facilities for finance. If its exports are large the prosperity of the whole people is promoted.

For many years the export of dairy products was very small, periods of over-production were frequent and the desired development of the industry retarded.

During the great war the world reached out its needy hand into America and we speeded up our dairying and produced not to our limit but far in excess of any previous effort. This demand, however, was to meet an emergency as was the Allied demand for ammunition. The demand for ammunition closed abruptly. The demand for our dairy products may close gradually, but yet surely, if we make no effort to sustain and further develop the export business thus begun. To this task our business leaders must address their efforts, and Government agencies lend their support.

The manufacture, transportation and sale of food products engages many activities. For the manufacture of dairy products farms are necessary, cows in large numbers, and many men to manage and perform the work. Feeds must be prepared, the cows properly attended and their milk handled with the greatest care until it is delivered to the factory where it is prepared for the world's markets. Here again many men and women are engaged and a large variety of valuable machinery employed. The railroads with their tens of thousands of employes then lend their facilities to transport the product to seaboard. At seaboard many people are engaged in unloading and reloading; shipping and custom offices employing large numbers of men and women to perform the necessary services for export. Bankers play a large part in handling the finances of this business and many people are engaged in arranging the banking details.

Associated with the export of milk products must necessarily be the packages which contain the products. In the manufacture of canned milk, canned butter, canned cheese and canned milk powder, very large quantities of cans are necessary. Many people are engaged in the manufacture of cans; in the tin plate from which the cans are made; and in the production of iron and tin from which the tinplate is made; and in the transportation of all these articles from source of production to place where consumed.

And so in the production and transportation of the coal, boxes, labels, nails and incidentals necessary to the manufacture of these products, the people of the nation also find a field for many and large activities. The larger our exports the greater our activities, our opportunities and prosperity. The export business interests every citizen.

The production of canned milk in the United States in 1914 was about 15,000,000 cases with practically no exports. The production in 1919 was 39,000,000 cases and the exports about 18,000,000 cases. The export of this 18,000,000 cases required all of the milk from 360,000 cows or the entire milk supply from 24,000 farms averaging 15 cows each. It required 18,000,000 boxes and 864,000,000 tin cans to carry this milk abroad.

The production of butter in 1919 was 1,493,000,000 pounds and only 34,000,000 pounds were exported—less than 2½%—and yet this small percentage exported required the milk from over 11,000 farms for a full year.

The production of cheese in 1919 was 352,000,000 pounds, only 4% of which was exported, yet it required all the milk from 1,800 farms to produce the export.

Just now there appears to be a very large overproduction of canned milk and also of cheese. There are tremendous accumulations of evaporated milk in France and England. Milk, butter and cheese have been sent abroad in larger quantities than were consumed. The armies have left large accumulations here and there to be sold at best terms obtainable. Exchange has operated to the great disadvantage of the American producer and a general warning has gone forth that manufacturers must proceed with care. Curtailment of production has already begun.

The cultivation of foreign markets is vital. We can and do produce more dairy products than we consume. With a quality product, efficiently and economically prepared, and with typical American genius employed, an export trade development and stability will be given the industry—a stability it has not had for several decades.

Approximately 40,000,000 bushels of potatoes constitute the crop harvested in this country this year, a total of about four bushels, or 240 pounds, an individual, if none are imported or exported. This means two-thirds of a pound a day. That ought to meet our potato requirements and not lead to such competitive scrambling as would run that essential food up to the prices it reached last spring. Present prices indicate that neither shortage nor speculation, as yet at least, is having the effect both were charged with a few months ago.

Grateful at Last

Angry Guest—Look here, waiter I have just found this trouser button in by soup.

Waiter (with a beaming smile)—Oh, thank you, sir. I couldn't think what had become of it.—Detroit Free Press.

Commercial Production of Grape Sirup

By W. V. CRUESS

Marked progress has been made in methods of preparing grape sirup. Sirup was produced from wine grapes and table grape culls in commercial quantities by several factories during the past season. Although certain difficulties were encountered, these were overcome and the product was marketed successfully, demonstrating that the manufacture of sirup offers a practical method of utilizing a large proportion of California's wine grapes. However, it is recommended that all other methods, such as evaporation and grape juice manufacture also be employed, because it will not be possible during the next season to convert the whole crop into sirup.

Several different types of sirup have been produced. Of these, the following are most promising: (1) a sirup of deep violet-red color and rich berry-like flavor made in vacuum pans of standard design; (2) a sirup, red or white as desired, made by concentrating fresh Muscat or other highly flavored juice by the freezing process and blending this with a sirup of high sugar content made by the vacuum pan process; (3) a red or white sirup made in a proprietary patented vacuum pan so designed that part of the natural grape flavor is condensed and returned to the sirup. These different varieties will be discussed in the order given above.

Red Grape Sirup by Standard Vacuum Process

It is believed that the manufacture of this sirup offers a greater possibility of utilizing a large proportion of the wine grape crop of the state than does any other one grape product, for the following reasons: It requires only the use of present winery machinery plus vacuum pan equipment of the kind already installed in some wineries. Many former winemakers are trained in the use of such vacuum equipment and grape-handling methods, so that the training of specialists will not be necessary. The equipment is standardized and produced by a number of firms and therefore may be had before the coming season. No patent rights are violated in making this sirup. Therefore, any one may undertake its production. During the past season sirup of this type has sold at wholesale in many instances for more than three dollars per gallon. This price represents from $125 to $150 gross for the product from a ton of fresh grapes; or is about the equivalent of 20c per pound for raisins made from grapes of the same quality.

* Extracts from a bulletin published by the College of Agriculture, University of California, Berkeley, Calif.

Equipment Necessary

The following list includes the essential items of equipment:

1. Crusher and stemmer (now installed in all wineries).
2. Basket or rack and cloth press (old-style continuous press not satisfactory).
3. Device for heating crushed grapes for color extraction.
4. Tanks and vats for leaching pomace and storing juice and sirup.
5. Filter or filter press.
6. Vacuum pan fitted with a barometric condenser and dry vacuum pump or a pump only which will maintain a twenty-eight to twenty-nine inch vacuum during operation of pan.
7. Can-sealing machine or bottling machine. Barrels may be used for bulk goods.

Grapes for Red Sirup

All varieties of wine grapes may be used. A sirup of intense red color can be made even if 50 per cent of the grapes used are of white varieties. The grapes should be thoroughly ripe to obtain the highest yields and best quality. Moldy or fermenting grapes give an inferior product.

Crushing and Stemming

These operations are carried out as for wine making. Stems should be well removed in order to prevent the sirup becoming too astringent in flavor.

Heating to Extract Color

The color of grapes is located in the skins and does not dissolve in the juice unless the grapes are heated sufficiently to cause the "color to flow." The color will dissolve slowly at 105° F. to 120° F. and almost instantly at 160° F. to 170° F. The higher temperatures have proved most satisfactory from the practical standpoint, although a better flavored product is obtained at the lower temperatures.

Iron should not be permitted to come in contact with the juice during heating, because it dissolves rapidly, injuring the flavor and color. Copper dissolves to a slight extent; it is doubtful whether injurious amounts of this will dissolve during heating of the crushed grapes. Aluminum, tin, "Monel" metal, or silver-plated copper may be used safely.

Tin-lined copper, glass-lined steel, or plain aluminum steam-jacketed kettles have all been successfully used.

Many different forms of heaters have been used in commercial practice. Vats fitted with steam coils have been used but are difficult to stir and to empty. The simplest heater observed consisted of a 1500-gallon tank in which was placed a large two-way fitting 2½-inch or 3-inch size attached to an overhead steam line, and with fitting left open at sides and bottom. When steam is passed through this device into the crushed grapes it acts as an injector, drawing the juice and grapes through the side openings and forcing them out through the bottom opening. This also stirs the grapes thoroughly. Aluminum or other resistant metal (not iron) must be used. The tank must be placed above the level of the press baskets and equipped with a large outlet and chute to permit rapid emptying of the contents into the press baskets.

The crushed grapes must be stirred to prevent overheating and to accomplish uniform and rapid heating.

As soon as a thermometer suspended in the crushed grapes indicates a temperature of 160° F. to 170° F. the heated grapes must be transferred at once to the press. A juice of better flavor and of as deep color can be obtained by heating the crushed grapes to only 110° to 120° F., transferring to wooden vats and allowing to stand overnight. This lower temperature is less injurious to the flavor, but is more troublesome to apply.

Another system that has been used is to crush the grapes into open vats, drain off the juice, heat the juice to 165° F. to 170° F. and return it to the crushed grapes. This is continued until the mixture reaches the desired temperature. However, for

regular commercial operation, it is believed that the injector type of heater will prove one of the most practical heating devices.

If the grapes have been heated to 160° F. or higher, they should be pressed at once to avoid extraction of too much tannin from the seeds. If it is necessary to allow the grapes to stand several hours after heating, lower temperatures should be used.

For large-scale operations the basket type of hydraulic wine grape press is most convenient and is efficient. Several baskets are needed for each press in order that the grapes may drain well before pressing. Rack and cloth presses, such as those designed for pressing apples, are used in eastern grape-juice factories for pressing heated grapes for grape juice manufacture. They produce very high yields but require more labor than the basket press. Small sirup factories have used hand power, basket screw presses, but these are too expensive to operate upon a large scale. A successful continuous press has recently been developed.

It will usually be desirable to line the press basket with burlap to prevent the grape pulp escaping between the press staves.

Well-drained heated grapes may be quickly pressed and a large yield of juice obtained because heating destroys the slimy nature of freshly crushed grapes and breaks down the juice cells.

Extracting Juice From Pomace

The press cake or pomace will amount to about 300 to 500 pounds per ton of grapes, and contains juice equal to over 50 per cent of its weight. This juice may be recovered by leaching the pomace with water. A simple method is to mix the pomace with sufficient water in the heating tank to render the mixture plastic. It may then be heated to about 120° F. and pressed. This dilute pressed juice may be used to extract a second lot of pomace, thereby materially increasing its sugar content. In laboratory tests a liquid containing several per cent of sugar was obtained by a second extraction of the pomace, although it is doubtful whether a second treatment would be made in commercial practice.

It is also possible to extract the juice from the pomace by the diffusion process used in European countries or by the sprinkling method, formerly used in California wineries.

The sugary solution obtained from the pomace should be concentrated separately from the juice obtained by the first pressing because of the inferior quality of the former.

The juice from the press is cloudy and should be made clear before concentration if a sirup of high quality is to be produced. Straining the freshly pressed juice through screens will remove the coarse particles of pulp, seeds, etc. Settling twelve to fifteen hours in rather shallow tanks, such as fermentation vats, will permit much of the suspended matter to settle. The settled juice may be drawn off the sediment and filtered through a wood-pulp filter of any of the types formerly used in wineries. The pulp used should not be excessively fine, as the filtration will otherwise be very slow or impossible. The pulp must be removed and washed much more frequently than where wine or vinegar is filtered. This makes the installation of ample pulp-washing machinery and a large stock of filtering pulp necessary. If these precautions are observed it will be possible to filter the juice. Wooden frame filter presses equipped with coarse cloths will probably give good results and large capacity, although preliminary tests by one grape sirup factory and by a sweet cider factory indicate that considerable experimental work must be done before thoroughly satisfactory results can be obtained.

The sediment from the settling tank may be filtered in bag filters or may be mixed with the pomace during water extraction, when part of the sediment will adhere to the grape skins and stems.

Juice may be clarified by the addition of about four to five gallons of a solution of casein containing three ounces of odorless commercial casein per gallon. This solution is made by dissolving a weighed amount of the casein in dilute ammonia water, boiling off the excess amonia and diluting with water so that each gallon contains three ounces of casein. This solution is added to the juice and thoroughly mixed with it. It will settle in eight to twelve hours if clarification has been successful and the clarified juice may then be filtered very easily.

In our experimental work the addition to each 100 gallons of juice of about eight pounds of Spanish Clay previously thoroughly ground with water to give a smooth fine-grained mud, will usually produce a rapid clarification, but gives a large amount of sediment.

Clarification will usually not be necessary or desirable, but may be employed if a brilliantly clear sirup is desired.

If grape juice is boiled down to a sirup in an open kettle the finished product will be dark brown in color and of a molasses flavor and odor, because the high temperature of boiling under atmospheric pressure caramelizes or scorches the grape sugar. If the atmospheric pressure is to a large degree removed by placing the juice under a vacuum the boiling point will be very greatly lowered, with the result that the grape sugars are not caramelized, much of the fresh grape flavor and aroma are retained, and the color of the juice is not injured. To obtain the best results a vacuum of at least twenty-eight inches should be employed, as this will give such a low boiling point that the sirup will not be injured appreciably. The relation between the boiling point and degree of vacuum as indicated by the "inches vacuum" on the gauge is shown in the above chart.

Water under a 24 to 26-inch vacuum (the degree of vacuum ordinarily used in commercial practice) boils at about 140° F. to 125° F. Grape sirup will boil at temperatures about 10° F. higher than these. At 29 inches vacuum water boils at about 75° F. and sirup at about 85° F.; temperatures no higher than mid-day temperatures in grape-growing districts during the picking season. To reach such a high degree of vacuum a "dry vacuum pump" in combination with a barometric condensor system will probably be most satisfactory. A wet vacuum pump plus a dry vacuum pump may also be used, but cost of installation and operation will usually be greater than with the barometric system.

The barometric condensing system consists of a condensing chamber connected to the vapor outlet of the vacuum pan into which chamber above the vapor entrance is led a jet of water, the vapors from the pan being condensed by contact with the water spray. The condensed vapors and water flow by gravity into a vertical pipe below the condensing chamber. This pipe is over 31 feet in height and opens into an open tank or hot well open in turn to the air. The air and uncondensed vapor from the pan rise to the top of the condensing chamber and are removed by a dry vacuum pump. The water used for condensing the vapors from the pan is usually supplied by a circulating pump acting independently of the vacuum pump.

In addition to a good vacuum pump a large supply of water for

condensing purposes is necessary to maintain a high vacuum. At 28 inches vacuum* and use of a barometric condensing system, approximately 5.5 gallons of water at 75° F. will be needed to condense each pound of water vapor; or, over forty gallons of water for each gallon of water evaporated from the juice. At 25 inches vacuum very much less water and at 29 inches more water is needed; that is, the higher the vacuum the more condensing water is needed.

Where the water supply is inadequate the water from the condensor may be cooled by use of a cooling water tower or spray cooling system such as used in many industrial plants, thus permitting the water to be used over and over again, although the water lost by evaporation on the cooling tower or spray must of course be replaced.

The vacuum pan may, if properly equipped, be used continuously, juice being allowed to flow into the pan continuously and the syrup withdrawn from the pan continuously by a special pump. However, according to O. S. Newman, the ordinary sirup pan can not be used in this way except under a vacuum of twenty-five inches or less because the pump usually installed will not operate satisfactorily against a vacuum of twenty-six to twenty-nine inches; but it is very probable that this problem may be overcome by use of a pump of proper design.

Some operators prefer to use their vacuum pans by the "batch" system; that is, to allow juice to enter the pan and at the same time concentrating until the pan contains a full charge of sirup. When this reaches the desired concentration the pan is emptied and a new "batch" started. This is less convenient than the continuous system and reduces the capacity of the pan, but probably permits more accurate control of the composition of the sirup.

The sirup should be concentrated until it will test at 60° F. at least 68° Balling, or 68° Brix, if it is to be held for more than a few weeks. We have found that sirup of 65° or 66° Balling will soon ferment and become moldy, but that sirup of 70° Balling will keep perfectly. Vacuum pans are equipped with a sampling device by which enough sirup may be removed for a Balling test. The Balling hydrometer used is calibrated from 0 to 70° Balling. A Brix hydrometer of the same range may be used because the Brix and Balling scales are practically identical. The temperature at which the test is made greatly affects the result; in making the test, a thermometer should be inserted in the sample with the hydrometer and correction made accordingly. The following table indicates the approximate number of degrees Balling or Brix to add to the reading shown by the hydrometer in a sirup of 60 to 70 degrees Balling or Brix.

Corrections to Be Made to Balling or Brix Readings on Account of Temperatures

Temperature, degrees F.	Degrees Balling or Brix to be added to hydrometer reading
64	.0
72	.3
75	.4
82	.7
86	.8
90	1.1
97	1.4
100	1.6
108	1.9
110	2.0
115	2.3
121	2.6
126	2.9
130	3.1
135	3.4
140	3.7
149	4.2
158	4.3
167	5.2
176	5.8
185	6.3
194	6.9
203	7.5
212	8.2

An example will make the use of the table clear. Suppose that a sirup sample from the vacuum pan tests 64° Balling or Brix and the temperature is 143° F. The temperature 140° F. is the nearest temperature given in table and the correction at 140° F. is 3.7° Balling or Brix; therefore, the approximate corrected reading will be 64 + 3.7 = 67.7° Balling or Brix.

Cooling the Sirup

When the sirup reaches the desired concentration it may be drawn off and stored to permit separation of cream of tartar before placing in final packages for sale; or it may be drawn directly into cans or other small containers. If it is to be stored in large lots, the sirup must be cooled to about 100° F. or less, in order that caramelization of the flavor and browning of the color will not take place. This point is of great importance, as O. S. Newman* has shown. Mr. Newman uses a long shallow copper pan, around the sides and bottom of which is circulated cool water. The sirup is cooled as it flows over the surface of the pan. Probably a vertical milk cooling coil would serve the purpose.

Storing the Sirup

Cream of tartar separates from the sirup and will collect on the sides and bottom of storage tanks, from which it may later be recovered as a valuable by-product. Where storage tanks are available and clear sirup is desired, it will probably be advisable to store the sirup a month or longer.

If the sirup is to go into cans or bottles it may go direct from the vacuum pan to these containers, which are sealed at once and are ready for shipment to market. If such containers are used, it is perfectly feasible to concentrate the sirup only to 64° or 65° Balling or Brix, heat it to 150° F. near the end of concentration and seal it hot in cans or bottles to destroy yeasts and molds. The yield of sirup is considerably greater at 65° Balling than at 70°, but it will not keep unless sealed hot or pasteurized after sealing.

Number 10 cans and gallon cans have been found very satisfactory as sirup containers and make a suitable size for soda fountain or household use.

Importance of Character of Lining of Vacuum Pans

Most sirup pans are made of sheet copper and the juice is concentrated in contact with this metal. Analyses by C. H. McCharles and R. W. Bettoli have shown that sirup containing sulfurous acid and concentrated in a copper vacuum pan may contain as much as seventy-five parts per million of dissolved copper, although in most sirups concentrated in this way the amount is much less. Two lots of sirup made in copper pans from unsulfured juice contained no dissolved copper. The maximum amount of copper allowed by the United States Department of Agriculture in gelatin is thirty-six parts per million; in most other food products, no copper is allowed. Whether the Department will rule against the presence of small amounts of copper in grape sirup is a question yet to be decided. Because the Department is desirous of promoting all new industries that will utilize wine grapes, it is believed that if the amounts of copper in the sirup are very small, no adverse action will be taken during the first season at least. A similar situation exists in regard to small amounts of copper in tomato products.

The interior of the pan may be silver-plated at a moderate expense. This metal is insoluble in untreated grape juice but dissolves rapidly in juice containing sulfurous acid. Tin linings are often used but tin dissolves in the juice rather rapidly and must be replaced in time. Re-

*Estimate furnished by Ingersoll-Rand Company.

*O. S. Newman, Manager of Woodbridge Vineyard Association, Woodbridge, California.

Restrictive Laws Affecting Oleomargarine

The State of New York recently filed complaints against retail dealers in the Supreme Court of Chautauqua County, New York, charging a violation of Section 41 of the Agricultural Law of New York, in that oleomargarine was sold without being labeled, branded and sealed in accordance with the statute.

The product involved was known as "Nut-Ola" Nut Margarine, a strictly white product, and was plainly labeled "Oleomargarine" on the carton in which it was contained. On November 5, 1920, following a trial of one of the cases, the jury found for the defendant.

The New York Agricultural Law defines oleomargarine as a product in imitation or semblance of butter, not the product of the dairy, etc., and the court instructed the jury as follows:

"Was it a substance or article in imitation or semblance of butter? On your answer to that question will depend your verdict. If you say that the substance was in imitation of butter, then you will find a verdict in favor of the people. If you say it was not, then you will find a verdict in favor of the defendant. * * * It is not sufficient to satisfy the statute that this article should resemble butter in a single particular * * * but the question is, taking it as a whole, under all its characteristics do you say, as a practical man, that this has the semblance of butter?"

We feel that the court took an exceedingly common sense view of the law. It is well known that a yellow color has been the bone of contention between the butter and oleomargarine manufacturers for many years. The statutes of nearly all of the states will be found to be directed against the sale of oleomargarine having a yellow color. Therefore, a product not having a yellow color and not in imitation of butter should not be brought within the restrictive labeling and sealing provisions of the law, even though designated as oleomargarine. Judge Sears gave the law a practical application wholly in keeping with its spirit and the intent of the legislature.

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tinning is extremely difficult for the special tubes used in such pans.

A good suggestion made by one vacuum pan manufacturer is to make the body of the pan of very heavily tinned or silver-plated copper and the boiling coils of Monel metal, nickel, or aluminum, all of which are insoluble in the juice. Aluminum, however, in time becomes pitted. Monel metal is insoluble and of high tensile strength, although somewhat more expensive than copper. Glass-lined vacuum pans may be used satisfactorily, although the evaporating capacity should be increased by installing inside the pan a Monel metal or other insoluble steam coil.

The pan should be deep enough or equipped with a trap to prevent loss of juice or sirup by frothing.

Sirup by Freezing

The process described above results in loss of much of the fresh grape flavor. By means of a process developed by H. C. Gore of the United States Department of Agriculture, it is possible to retain practically all of the fresh flavor in concentrated form in the finished product. The Gore process is carried out as follows:

The juice is frozen to a solid mass at 10-15 degrees Fahrenheit. It is then broken in an ice-crushing machine. The crushed ice is placed in an ordinary sugar centrifuge and the sirup separated from the ice by centrifugal force. The sirup is thrown through the small holes of the centrifuge basket and the ice remains in the centrifuge. The sirup so obtained is again frozen at 0-10 degrees Fahrenheit to a mushy mass of ice crystals and sirup. By centrifuging this mixture a sirup of 50 to 60 degrees Balling is obtained. A small amount (about 1 per cent) of sugar is lost in the ice. Gore's work was done upon apple juice.

The writer repeated Gore's experiments with Muscat grape juice instead of apple juice. A sirup of 55 degrees Balling was as rich as it was found feasible to produce with the available equipment. The sirup was therefore not sweet enough for general use and would ferment quickly unless sterilized. Even a 60 degree Balling sirup is too "thin" and will not keep long. A 60 degree Balling sirup is the sweetest sirup recorded as having been produced by this process.

Therefore, it was found necessary to blend with this sirup obtained by freezing, a sirup of 70-75 degrees Balling made in an ordinary vacuum pan. The blend of 65 degrees Balling was very rich in flavor and far superior to any sirup that had previously come to the writer's attention.

Second crop Muscat grapes, which formerly were used for wine making, and can not be sun dried because of late ripening, would make an excellent sirup for blending purposes.

It was noted that the ice left in the centrifuge was sour in taste. When melted it was found to contain 75/100 of one per cent of cream of tartar and a similar amount of sugar. On concentration of a sample of this liquid to a small volume most of the cream of tartar was recovered in a quite high state of purity. This suggests the possibility of obtaining cream of tartar as a valuable by-product.

The Gore process may be used without royalty charges because it is covered by a public service patent which makes the process public property. It is stated that the process is now used in a commercial way for the production of pineapple sirup.

Preservation of Juice

Juice may be preserved in one of three ways for shipment to a sirup plant or storage at the sirup plant until needed.

By Pasteurization.—The juice may be heated to 175° to 185° F.,

run hot into sterilized barrels, and sealed. Most of the juice will keep, although some loss by fermentation will result. The method is troublesome and expensive, but could be used in case of necessity.

By Freezing Storage.—At 32° F. grape juice will ferment, but will keep perfectly at 15° to 20° F. Large breweries are equipped with ample cold-storage facilities which might be used in conjunction with sirup factories located in such establishments. The fresh juice could be chilled by passing it over the coolers formerly used for chilling beer wort. The chilled juice could be stored in glass-lined or wooden tanks formerly used for beer, and could be removed and concentrated as needed. It would not repay other prospective manufacturers of sirup to install expensive cold storage equipment.

By Use of Sulfurous Acid.—Fermentation may be prevented by the addition of sulfurous acid. The amount necessary in hot localities is about 12/100 to 15/100 of one per cent, or, expressed in usual terms, 1,200 to 1,500 miligrams per liter. In cooler localities, 750 to 1,000 milligrams per liter has been found sufficient.

Sulfurous acid may be had in several forms, such as a 6 per cent solution in water; or as the liquefied gas which is almost 100 per cent sulfurous acid; or as the salts, sodium metabisulfite and potassium metabisulfite, which contain about 50 per cent sulfurous acid.

The addition of 17½ gallons of 6 per cent sulfurous acid per 1,000 gallons of juice corresponds to approximately 1/10 of 1 per cent sulfurous acid. This corresponds to approximately 16 to 17 pounds of sodium or potassium metabisulfite per 1,000 gallons of juice. If either of these salts is used it should first be dissolved in water; for example, at the rate of one pound per gallon. The sulfurous acid must be mixed thoroughly with the juice; this can be done by stirring with a wooden paddle or by compressed air. Metal should not be permitted to come in contact with freshly treated juice.

The juice should be cooled to 70° F. or less, if possible, before storage to insure the best results. Artificial cooling of juice from heated grapes will probably be necessary. The cooler the juice the less sulfurous acid is needed to preserve it. In our experimental work with 50-gallon lots, juice has been held for two years with 15/100 of 1 per cent of sulfurous acid.

Juice containing sulfurous acid must be treated to remove as much of this prescrvative as possible before the juice is made into sirup. One method suggested and tested has been to heat the treated juice to 160° F. and pass a stream of air through it at this temperature. In small laboratory tests most of the sulfurous acid can be removed in this way, but upon a large scale the results have not been very satisfactory. The passing of steam through the boiling juice in the open air removes the sulfurous acid more rapidly than does a current of air; steam passed through the juice in a vacuum pan removes the sulfurous acid the most rapidly of any method tested, but the method offers mechanical difficulties when applied on a large scale. Dry steam must be used and the juice must be kept at the boiling point during the passage of steam to prevent a great increase in volume by condensation.

Simple concentration in a vacuum pan will remove a large amount of the sulfurous acid, as the following typical test by R. W. Bettoli will show: The original juice contained 1,288 milligrams of sulfurous acid per liter. It was concentrated to a sirup of 70° Balling under a vacuum. After concentration the finished sirup contained only 420 milligrams. Allowing a concentration of 3 to 1, this sirup after diluting with water to the original Balling degree of the juice would contain only 140 milligrams of sulfurous acid, indicating that about 90 per cent of the sulfurous acid was removed during the concentration. These results were confirmed by large-scale experiments by Mr. Bettoli and by laboratory tests by the writer.

A much better sirup can be made from the fresh untreated juice than from juice containing sulfurous acid. The removal of the sulfurous acid is incomplete and troublesome. Juice containing sulfurous acid is corrosive and attacks both copper and silver, necessitating the use of glass-lined or Monel metal or other resistant vacuum pans. For these reasons it is strongly advised that vacuum pans of sufficient size be installed to concentrate the juice from the grapes as rapidly as they are received; thus avoiding the necessity of using sulfurous acid. In other words, our advice is "Do not use sulfurous acid if it can possibly be avoided."

Summary

1. As a result of laboratory and commercial experiments in grape sirup manufacture it is believed that a sirup of deep red color and rich berry-like flavor will give the best results from a commercial standpoint during the coming season. Other types of sirup with a larger amount of fresh grape flavor may in time supersede the type of sirup recommended above.

2. Large wineries already possess all necessary equipment for grape sirup manufacture except vacuum pans. Grape sirup manufacture can more readily be undertaken by such establishments than by small wineries. Milk canneries now equipped with large vacuum pans might well consider grape sirup manufacture as a profitable side line. Breweries, because of their large cold-storage capacity, steam plants, filtering equipment, etc., may easily be converted into grape sirup factories.

3. Vacuum pans should be constructed of materials not soluble in the juice. Copper has been the most common material employed, but analyses show that small amounts of this metal may dissolve in the juice during concentration. Therefore, the use of copper vacuum pans might in time conflict with the pure food regulations, and make the use of a material about which there is no doubt, highly desirable.

4. Sirup should be concentrated to 68° to 70° Balling if it is to be kept without sterilization.

5. The use of a high vacuum of 28 to 29 inches during concentration prevents injury to the flavor and color of the sirup by heat.

6. The sirup should be cooled after concentrating to avoid injury to color and flavor of the sirup.

7. Grape sirup has a great many different uses and its manufacture presents one of the most promising methods of profitably utilizing the crop of wine grapes of the state.

FOREIGN TRADE IMPORTANCE TO THE PACKER

(Continued from page 19)

part of its federally-inspected pork products."

What is true of the meat industry must be true in greater or lesser degree of every other industry in the nation and everything that can be done to aid in restoring and increasing our export business should be done. I cannot emphasize too strongly the need of a stable credit plan for the European countries which are so sorely in need of American products. The element of time, too, is important lest we delay too long and find that much of the business to which we feel we are entitled, has been pre-empted by other nations.

Important Announcement
to the Readers of
The American Food Journal

ON JANUARY 1st the subscription price of The American Food Journal is to be advanced from $2.50 to $3.00 per year.

Plans are under way whereby the scope of the publication will be broadened to embrace the interests of all those concerned with the scientific and practical problems of food manufacture and distribution. In addition we shall continue to serve with ever-increasing fidelity the interests of food officials, domestic science experts and others who are concerned with the various phases of scientific food subjects.

The slight increase in the subscription rate, however, is made primarily to offset the tremendous increase during the past year in printing and other production costs. Many publishers, long before this, have found it necessary to increase their rates, and we are confident that our friends will appreciate our position.

With important editorial plans under way, we are able to assure our readers that they will receive a publication each month that will truly justify the term, "The National Magazine of the Food Trades." No effort will be spared to fulfill the expectations of the most exacting.

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For a limited period, therefore, we will accept subscriptions at $2.50 for one year or $5.00 for two years. In the case of present subscribers, their present subscriptions will be extended from the date of expiration for the desired period, but in no event for more than two years at the old rate. (To those who are not subscribers we offer a Special Trial Subscription of six months for One Dollar.)

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Decision In Price Baking Powder Case

(*Continued from Page 9*)

from grapes; phosphates are derived from bones and certain rocks; alum is a mineral derivative. Tartrates are more expensive than either of the others. Tartrates are wholesome in food. Although by no means unchallenged, there has long existed a well defined opinion among scientific and medical authorities that phosphates were undesirable, and that alum was unwholesome for food usage. An active competitive warfare between baking powder manufacturers has been maintained for many years. This warfare has not so much taken the form of competition between particular manufacturers on the basis of special excellence in process of manufacture, but has been almost entirely along lines of the acid ingredient used, and has been based upon the wholesomeness or unwholesomeness of that ingredient. Appellant has, for years, sought patronage for its necessarily higher priced tartrate powder, upon the claim that tartrates were wholesome, while phosphate was undesirable, and alum positively injurious. Manufacturers of phosphate and of alum powders have met this challenge. The result has been an extended and wide spread campaign of education of the buying public along these lines. A number of advertisements of various sorts, distributed in Arkansas by appellant, convince that the "feature" held out to the buying public why this brand should be preferred, has been that it was a pure tartrate powder. When we consider that this powder was appreciably higher priced than phosphate or alum powders, and that either of those powders would release carbonic acid gas and leaven dough, we cannot escape the conclusion that appellant has been successful in its campaign of public education, and that the moving inducement in the mind of that portion of the public, which patronized this brand and created the valuable good will therein, has been that tartrates were more desirable for food than phosphate or alum. We cannot doubt that the bulk of this good will rests upon the presence of tartrates, and the absence of phosphate or alum in this powder. The purchasers who created and maintain that good will expect, and have been educated by appellant to expect, a tartrate powder when they buy this brand. The attitude, therefore, of the buying public who bought this brand, prior and up to September, 1919, and, so far as shown, until the institution of this proceeding, was that when they purchased it they secured a healthy, efficient tartrate powder. In September, 1919, appellant changed this acid ingredient to phosphate, no longer using any tartrates therein. The claim is made that recent more searching analyses and experiments have proven that phosphate is not unwholesome nor undesirable for food usages. So far as this record shows, the new phosphate powder is as wholesome and as efficacious as the former tartrate powder, and possesses the added virtue of costing the public about one-half. Misbranding, however, does not rest upon unwholesomeness nor adulteration. It rests upon deception of the buyer. That deception consists in inducing him to purchase, under a given mark, brand, or label, an article which is different from that which he intends to buy and which he has a right reasonably to suppose he is getting under that mark, brand, or label. The old powder was to disappear, with the result that its users would buy some other powder. Appellant, naturally and properly, desired to secure that patronage for the new product. It might reasonably expect that a portion, at least, of that patronage, relying upon experience of the excellence of the former powder, might prefer to buy the new powder made by it to a similar powder made by others. It had a right to inform its patrons that the source of the old and new powders was the same. This it could do in any proper and effective method, but it must do it in such a way that the average buyer would acquire the information of the change so that he could act with that information. We are here concerned with the label. The question is, therefore, whether, having in mind the attitude of the buying public toward the old label used on the cream of tartar powder, the new label used on the phosphate powder would probably and naturally deceive the average buyer of the new package into believing that he was getting the old cream of tartar powder. The old and new labels are as here set out.

These labels are pasted entirely around cans containing certain weights of powder.

If there had never been a former label, the new label would be well nigh unobjectionable. Considering the new label, alone and apart, it states with fair truthfulness and completeness all that need be upon such a label. The word "cream" might be objectionable, as suggestive of cream of tartar, in view of the education of the public as to this ingredient. There can be no doubt, however, that any one who should read the label with any care would be informed truthfully as to the origin and acid ingredient. But we cannot disregard the earlier label. The nub of the claimed deception is not that the new label alone and of itself is such that it would deceive a purchaser who had never before heard of "Dr. Price's Cream Baking Powder," but it is that it would, by its general similarity, deceive a large patronage long familiar with the old label. It should be added, that this very patronage constitutes the good will which appellant is seeking to protect and preserve. A comparison of the two labels is therefore necessary. While an inspection of the above pictures will be sufficient to support the conclusions reached, a few observations will be helpful. Because of the greater bulk, as compared to weight, of cream of tartar over phosphate, the phosphate cans were made with a slightly raised bottom. In outside size and shape the two cans are identical. The coloring of the labels, which is black, red, and yellow, is identical. The location and size of type is identical. The differences are: omission from the new label of the medallion (which was separately posted on the old label, and was blue in background, with white lettering and dull gold border wreath); substitution of a bunch of golden rod for the grapes formerly held in the cornucopia design; and change in certain portions of the legend relating to the acid ingredient. The general appearance of the two labels is strikingly similar. Even if placed side by side on a grocery shelf a few feet removed

MORRIS

Supreme Marigold

For baking you'll prefer this wholesome Marigold Oleomargarine. It's made from only the purest ingredients combined with pasteurized milk. Request the kind with the yellow and black label.

MORRIS & COMPANY

Beech-Nut Ginger Ale

Great!

YOUR patrons who appreciate fine flavor will be delighted to know you serve Beech-Nut Ginger Ale. Have the **full name** BEECH-NUT printed on your menus.

BEECH-NUT PACKING COMPANY, Canajoharie, New York

WHY not earn a little extra money during your spare time? We will pay you handsomely for getting subscriptions to

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WRITE FOR PARTICULARS

Whiter—Sweeter—Lighter Bread and Cake

The first essential of success in home baking is to employ a leavener that is pure, thorough and dependable—one that raises evenly, and gives the bread and cake the right texture, and appetizing appearance—and makes them easily digested. The purity, uniform strength and perfect keeping qualities of

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THE WHOLESOME

BAKING POWDER

insures whiter, sweeter and lighter cake and bread—it raises the baking just right, and adds to the nutritive value, as it restores phosphatic elements equivalent to those which fine wheat flour loses in the process of milling.

Every Housewife, Dietitian, Domestic Science Teacher and Lecturer should have a copy of "Rumford Dainties and Household Helps." We will be pleased to send it Free upon request.

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Providence, R. I.

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Serve

Coca-Cola

TRADE MARK REGISTERED

DELICIOUS AND REFRESHING

Serve the genuine—just as you receive it. Take advantage of the crowds that call for it—and the trade that makes the turnover.

THE COCA-COLA COMPANY ATLANTA, GA.

3A

from the customer, the similarity would be evident. The probability of the customer mistaking the new for the old is increased if only the new be displayed, for then all standards of casual comparison and contrast vanish. Buyers, who have become customers of a brand, no longer give it more than the most general inspection. They become familiar with its general appearance and, having confidence in it and what it represents, they do not expect and therefore do not look for essential change either in the article or in the label. This is the attitude of the average buyer of any product or article of established reputation. If the manufacturer makes a change in the article and that change be of a character which would, considering all of the attendant circumstances, naturally affect the attitude of the purchasers of that article, fair dealing and the law require that such purchasers be effectively informed of that change. Here, the acid ingredient of the baking powder was a material consideration in the mind of the purchasing public. For years that public had been educated by appellant to prefer this brand because it contained cream of tartar, and did not contain either phosphate or alum. That public had been taught to expect cream of tartar and as absence of phosphate or alum when it purchased this brand. The label has been long employed and has become familiar to the public. Obviously, a complete change from cream of tartar to phosphate would be an important difference in the minds of the patrons of this brand. Therefore, any label on the new powder must be so different from the old label, in appearance and prominent legend, that the usual buyer, familiar with the old brand and ignorant of any change, would have his attention arrested and be prompted to suspect, if not to know, that the powders were not the same, and thus be led to investigate the label. We think the present label fails in this requirement, and constitutes a misbrand, which would probably and naturally deceive the average purchasers of the former powder. It is suggested that the difference in price would excite inquiry and investigation. The advertisements in any daily paper reveal such wide and apparently unreasonable differences and reductions in prices of all character of articles that quality has largely weakened as a basis for price in the public mind. There are other reasons, unassociated with quality, which influence change in price.

Puffed Wheat in milk

Puffed Rice with fruit

Puffed Corn with cream.

Endless Delights
from These Three Bubble Grains

Have the three Bubble Grains ever ready—Puffed Wheat' Puffed Rice and Puffed Corn.

Some like one best, some another. And each best fits some way of serving. You need them all.

Then let children revel in them morning, noon and night. There is nothing better for them, nothing that they love so well.

100 million steam explosions

Each Puffed Grain has been created by a hundred million steam explosions. Every food cell has been blasted. Digestion of the whole grain is made easy and complete.

These are Prof. Anderson's inventions—the best cooked cereals in existence. Serve them any hour.

Some folks treat Puffed Grains as tidbits—as food confections for some extra-dainty meal. But one is whole wheat, remember, and one whole rice. All are scientific grain foods. What better food can children get from morning until bedtime?

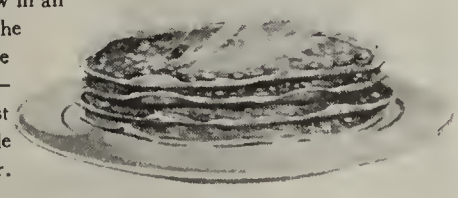
These are flimsy dainties, flaky and flavory, puffed to eight times normal size. Yet the supreme food for children is a dish of Puffed Wheat in milk.

Puffed Wheat **Puffed Rice** **Puffed Corn**

Also Puffed Rice Pancake Flour

Nut-like pancakes

Puffed Rice flour is blended now in an ideal pancake mixture. It makes the pancakes fluffy and gives a nut-like taste. Simply add milk or water—the flour is self-raising. The finest pancakes ever tasted are now made with Puffed Rice Pancake Flour. Ask your grocer for it.



The Quaker Oats Company

Sole Makers

Depression Will Help Margarin Sales, Says Manufacturer

Joseph Wilkins, manager of the margarin department of the Nucoa Butter Company, Woolworth Building, New York, who has contributed largely to the growth in the sales of that company's product, "Nucoa," gives the following statement to THE AMERICAN FOOD JOURNAL relative to the effect which the present business depression may have on sales of margarin:

"This period of depression has its lessons and, very decidedly, its benefits. Everyone knew it had to come sometime. It was inevitable. Few, however, were prepared. Every student of economics will tell you this had better occur now than a year hence. Each month's delay in the start toward normal prices was making the strain more difficult.

"Everyone is asking—'How will my business be affected?' The margarin business will continue relatively good. By that we mean that by its very nature it will respond to more careful spending, and, while no one escapes in times like these, and while it is a fact that the food business does become dull, the big fact remains that people *do* eat. What really takes place is economy. Five pounds of everything has a way of going as far as seven or eight during the 'don't care' period. All hands are learning to throw a dollar further, and in this process margarin will grow.

"The panic of 1893 made the margarin business. It had been very slow, and very uncertain since 1886 when the Government first taxed this product. It grew in leaps and bounds after the panic referred to. Then it went to pieces in 1902 when coloring at the churn became taxable at 10 cents per pound. The business had to be built all over again. It was growing splendidly when along came the depression of 1907 after which the product again came into its own in a real big way. In 1914 it received its most important impetus. War broke out, and so did margarin. It came at the most opportune time. It grew and grew and grew. This growing was in the hearts of the people; the only growing worth while. It found expression in tremendous tonnage with us.

"When business mends—and it will, have no fear—and the trade pendulum again swings up, we shall be facing ten years or more of the greatest prosperity this country has ever known or ever dreamed of. We are awake. We know what is going on, and we know what we are facing, but our faith is very strong."

Look for Price's Tropikid on the label.

PRICE'S VANILLA

Price's is the pure juice of the finest vanilla beans—aged in wood to give it a rich, mellow flavor. No substitute flavor nor artificial coloring in it!

PRICE FLAVORING EXTRACT COMPANY
Chicago *In Business 66 years* U. S. A.

Clears your desk for action

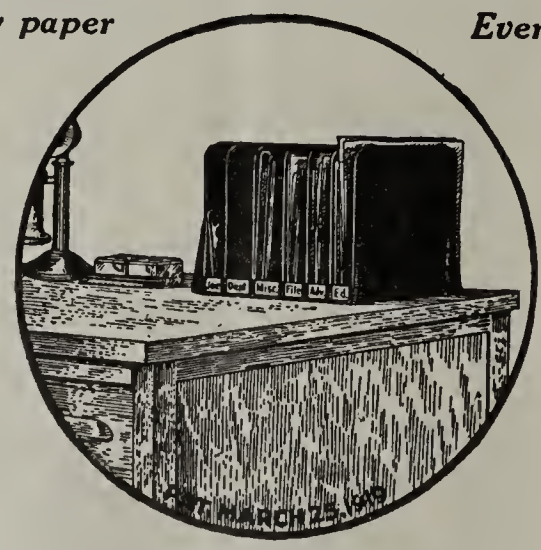
A place for every paper

A clean desk inspires quick and efficient handling of work. It enables you to concentrate and think clearly on the one problem in hand.

With your desk covered by a confusion of miscellaneous papers, you cannot work to the best advantage.

A Desk SYSTEM File will smooth out many of your troubles, especially those caused by congestion of important papers.

It holds your important papers ready for quick reference. Systematizes your desk work.



Time Saving
Desk System File
PAT. MARCH 25, 1919 REG. U.S. PAT. OFFICE

Extra compartments added as required. Made of enameled sheet steel. Ask for booklet, "How to Get Greater Desk Efficiency."

Every paper in its place

A Desk SYSTEM File will pay for itself in a few months. Occupying a space no larger than a common wire desk basket, it enables you to have any number of indexed filing compartments.

Compact, neat and refined in appearance, it will give an air of personal efficiency to your desk.

It is an ever-ready private secretary, for filing or distributing correspondence and memorandum papers, covering each department of your business.

Four Compartment File, $6.00

Extra Units $1.50 each.

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1055 N. Olive Street

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Packer and Manufacturer of the Finest

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BRAND

Canned Foods, Jellies, Preserves,
Plum Pudding, Sauces, Table Delicacies
and
PRIDE OF THE FARM Tomato Catsup

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CANNED SALMON

ALL GRADES
ALL SIZES

Largest Distributors in the World

KELLEY-CLARKE CO.
New York City Seattle, Wash.

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for

Foods—Drugs—Oils

Infinite Variety
Large Capacities
Prompt Deliveries

American Can Company
Chicago New York San Francisco
With Offices In All Large Cities

Amy Smith says:

"I find Moxley's Margarine gives excellent results in cooking, having tested it on corn bread, biscuits and cakes."

"I have also served it for table use and think only an expert could detect it from a good grade of butter."

Amy Smith is the head of the Cookery Department of the great woman's magazine, "Today's Housewife."

Dixie Margarine is pasteurized into purity in every ingredient.

Churned by Wm. J. Moxley Inc. Chicago

Every Kind of WARD'S

FAR FAMED

BREAD and CAKES

is the finished and perfected result of skill, science, experience, and the use of highest grade materials.

WARD BAKING COMPANY

New York Boston Providence Cleveland
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The Greatest Book

Ever Offered to the Public

1920 EDITION—JUST READY

Henley's Twentieth Century Book of

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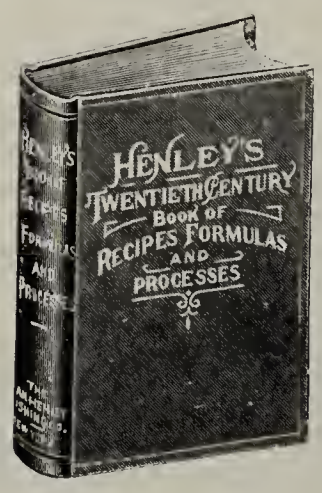

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Profit by the knowledge that has made others successful. GET THIS BOOK TODAY.

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PATTERSON PUBLISHING CO.
38 S. DEARBORN ST., CHICAGO

FRENCH REGULATIONS FOR MARKING CANNED FRUITS

The Director General of Customs in Paris has transmitted the French regulations for the marketing of containers of canned fruits and preserves, under date of October 21, 1920, which are as follows:

Under present legislation, canned fruits and preserves are not required to show the country of origin on the containers. However, this requirement exists in so far as foreign prunes are concerned, which, according to the terms of Article I of the law of July 11, 1906, can not be imported into France unless they bear a designation showing the country in which they were prepared. This indication should be placed on each container, by being stamped in relief or by indentation, in very visible Latin characters of at least four millimeters, in the middle of the cover or on the bottom and on a part bearing no other impression. The same indication must be shown by labels on the cases and packing of the shipments. On the inside carton packing containing the prunes, the stamping in relief or by indentation may be replaced by an adhesive label placed on the top or the bottom.

In a general way it is forbidden to add any chemical product, preservative, or antiseptic to the fruits, vegetables, mushrooms, and other food products, except ordinary salt.

However, in the case of jams, jellies, or marmalades, the following are not considered as adulterations: (1) The addition of pure tartaric or citric acid up to the limit of 2 grams per kilogram of the product; (2) the addition of cochineal, in order to heighten the color. However, the products thus prepared lose all right to be called pure fruit preserves.

Coloring by other material than cochineal is also permitted, under the conditions fixed by ministerial decree of June 20, 1912, provided that the designation be immediately followed by the word "fantaisie," or "colored."

NEW BRITISH MEAT PRICES

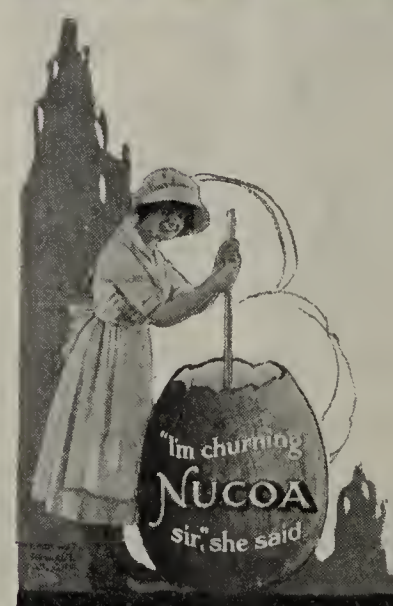
The British Ministry of Food has issued new instructions establishing the maximum price of imported bacon, ham, and lard, and outlining the general conditions under which the business may be carried on, according to the American consul at London. The full official list of prices will be transmitted to anyone upon request to the Bureau of Markets.

Enamel Lined Tanks for Oil or Food Stuffs

6 Horizontal Tanks, 7 ft. inside dia., 82 ft. long, 23,250 gallons each.
6 Horizontal Tanks, 8 ft. inside dia. by 82 ft. long, 30,380 gallons each.
12 Horizontal Tanks, 10 ft. inside dia. by 44 ft. long, 25,544 gallons each.
69 Horizontal Tanks, 10 ft. inside dia. by 46 ft. long, 24,366 gallons each.
37 Vertical Tanks, 9 ft. 6 in. inside dia. by 17 ft. 8,463 gallons each.

CHAS. S. JACOBOWITZ
Brewery Dismantler
1382 Niagara St. Buffalo, N. Y.

NUCOA



The sun never sets on Nucoa sales. It is sold from San Francisco to Antwerp. It will encircle the globe. It must. It repeats.

THE NUCOA BUTTER COMPANY
New York *Chicago* *San Francisco*

BUTTERS BREAD — STAYS SWEET

THERE IS

CLEANLINESS, HEALTH
INSURANCE, ECONOMY
AND CONVENIENCE IN

Our **PET**
BRAND
Evaporated Milk

The Standard of the World

Wins and Holds Trade on
account of its Superior Quality

PREPARED BY

Helvetia Milk Condensing Co.
HIGHLAND, ILLINOIS
ORIGINATORS OF EVAPORATED MILK

Ammonium Phosphate

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Highest Quality
For Food Purposes

Victor Chemical Works
New York CHICAGO St. Louis

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Every type of restaurant is covered by articles written from actual experience.

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— made right for your purpose and product. Known from Coast to Coast.

All such prepared foods—plain wrapped or packaged—as depend upon air-tight covering for keeping qualities will open up fresh and crisp if hermetically sealed in our **Self-Sealing Waxed Paper.**

"The proof of the pudding is in the eating." Ask some of our customers. We'll give you the names, also samples and prices on request.

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PARCHMENT PAPERS

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KALAMAZOO, MICH.

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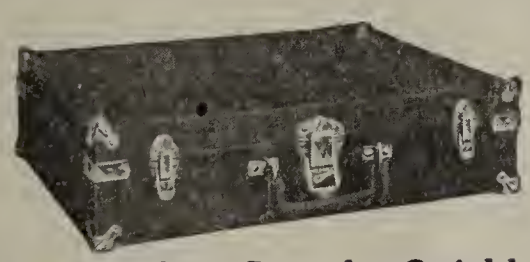

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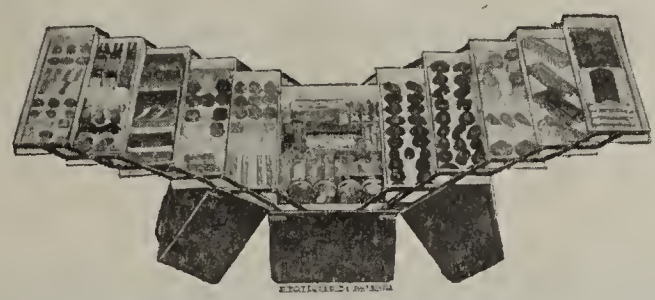

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